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ATMOSPHERIC ENVIRONMENT FOR SPACE SHUTTLE (STS-51C) LAUNCH

By G. L. Jasper, D. L. Johnson, C. K. Hill, and G. W. Batts
Systems Dynamics Laboratory

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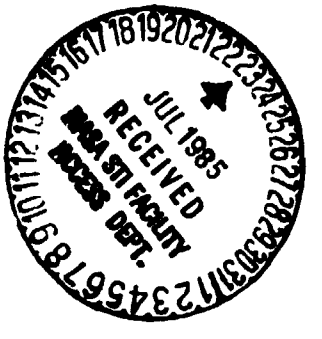

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16. ABSTRACT

This report presents a summary of selected atmospheric conditions observed near Space Shuttle STS-51C launch time on January 24, 1985, at Kennedy Space Center, Florida. Values of ambient pressure, temperature, moisture, ground winds, visual observations (cloud), and winds aloft are included. The sequence of pre-launch Jimsphere measured vertical wind profiles is given in this report. The final atmospheric tape, which consists of wind and thermodynamic parameters versus altitude, for STS-51C vehicle ascent has been constructed. The STS-51C ascent atmospheric data tape has been constructed by Marshall Space Flight Center's Atmospheric Sciences Division to provide an internally consistent data set for use in post flight performance assessments.

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I. INTRODUCTION

This report presents an evaluation of the atmospheric environmental data taken during the launch of the Space Shuttle/STS-51C vehicle. This Space Shuttle vehicle was launched from Pad 39A at Kennedy Space Center (KSC), Florida, at 1950 UT (1450 EST) on January 24, 1985.

This report presents a summary of the atmospheric environment at launch time (L+0) of the STS-51C, together with the sequence of prelaunch Jimsphere measured winds aloft profiles from L-12 hr through liftoff. The general atmospheric situation for the launch and flight area is described, and surface and upper level wind/thermodynamic observations near launch time are given. Since the ship Redstone was unavailable for STS-51C duty, the SRB descent/impact atmospheric data were not taken. However, one can use the STS-51C ascent data for SRB studies, as the best substitute.

Previous MSFC-related launch vehicle atmospheric environmental conditions have been published as Appendix A of individual MSFC Saturn Flight Evaluation Working Group reports [1]. Office memorandums have been issued for previous flights giving launch pad wind information. A report has also been published [2] which summarizes most launch atmospheric conditions observed for the past 155 MSFC/ABMA-related vehicle launches through SA-208 (Skylab 4). Reports summarizing ASTP, STS-1 through STS-51A launch conditions are presented in References 3 through 17 respectively. Table 1 gives the atmospheric L+0 launch conditions for all the Space Shuttle missions.

II. SOURCES OF DATA

Atmospheric observational data used in this report were taken from synoptic maps made by the National Weather Service, plus all available surface observations and measurements from around the launch area. Upper air observations were taken from balloon-released instruments sent aloft from Cape Canaveral Air Force Station (CCAFS). High-altitude winds and thermodynamic data were measured by the Super-Loki rocketsondes launched from the CCAFS. Table 2 presents a listing of systems used to obtain the upper level wind profiles used in compiling the final ascent atmospheric data tape. Data cutoff altitudes are also given in Table 2.

III. GENERAL SYNOPTIC SITUATION AT LAUNCH TIME

An area of high pressure, located southwest of Florida, prevailed over KSC during the launch of STS-51C. Light to moderate southwesterly winds were the rule during countdown. Figure 1 presents the surface map conditions 7 hr and 50 min before the launch of STS-51C. Westerly winds dominated the flow aloft over the KSC area. Figure 2 shows the winds aloft condition at the 500 mb level 7 hr and 50 min before launch.

Clouds were scattered over KSC prior to the launch of STS-51C. Figure 3 depicts the GOES-6, visible picture at 2000 UT (10 min after liftoff) with 500 mb contours and wind barbs superimposed. Figure 4 presents an up-close visible shot of the Florida peninsula as recorded by GOES-6, taken also at 2000 UT.

The extreme cold temperatures, associated with the presence of a polar air mass persisting throughout Florida the 3 days prior to launch, had moderated considerably by January 24, 1985. These extreme low temperatures had caused cancellation of the launch on January 23, 1985, due to ET ice/frost problems.

IV. SURFACE OBSERVATIONS AT LAUNCH TIME

Surface observations at launch time for selected KSC locations are given in Table 3. Included are pad 39A, shuttle runway, and CCAFS balloon release station observations. Neither precipitation nor lightning was observed at launch time.

Table 4 presents PAD 39A wind data along with other standard hourly atmospheric measurements and sky observations for the 6-hr period prior to launch of STS-51C. Values for wind speed and direction are given for the 84 m (275 ft) FSS reference level and 18 m (60 ft) pad light pole level.

V. UPPER AIR MEASUREMENTS DURING LAUNCH

The FPS-16 Jimsphere (2005 UT), MSS Rawinsonde (1954 UT), Super-Loki Rocketsonde (2120 UT), and Super-Loki Robin (2050 UT) systems were used to measure the upper level wind and thermodynamic parameters for STS-51C launch. At altitudes above the rocket-measured data, the Global Reference Atmosphere (GRA) [18] parameters for January KSC conditions were used. A tabulation of the STS-51C final atmospheric data for ascent is presented in Table 5 which lists the wind and thermodynamic parameters versus altitude. A brief summary of parameters is given in the following paragraphs.

A. Wind Speed

At launch time, wind speeds were 17.1 ft/sec (10.1 kn) at 60 ft and increased to a maximum of 199 ft/sec (118 kn) flowing from 265 deg. This maximum occurred at an altitude of 42,900 ft (13,076 m). The winds decreased above this level as shown in Figure 5. The overall maximum measured speed was 282 ft/sec (167 kn) at 269,000 ft (81,991 m) altitude.

B. Wind Direction

At launch time, the 60-ft wind direction was from the southwest (228 deg) and shifted to a westerly component above 37,000 ft (11,278 m). Winds remained westerly through 81,000 ft (24,689 m) altitude. Winds above this level oscillated from the north to the east and became southwesterly around 174,000 ft (53,035 m). The wind continued southwesterly through 307,000 ft (93,574 m). Winds shifted and took on an easterly component above this level as shown in Figure 5. Figure 5 shows the complete wind versus altitude profile.

C. Prelaunch/Launch Wind Profiles

Prelaunch/launch wind profiles presented in Figures 6 through 9 were measured by the Jimsphere FPS-16 system. Data are shown for five measurement periods beginning at L-15 hr and extending through L+0.

The wind speed and direction profiles for the 15-hr period prior to and including L+0 are shown in Figures 6 and 7. The in-plane (head-tail wind) and out-of-plane (left-right crosswind) profiles are given in Figures 8 and 9. The wind speeds and in-plane component speeds were greater than 95 percent values at some altitude levels. The out-of-place component speeds were approximately equal to the mean values. No ascent load exceedances were calculated. The prelaunch atmospheric conditions are discussed in more detail in Section III.

D. Thermodynamic Data

The thermodynamic data taken at STS-51C launch time, consisting of atmospheric temperature, dew-point temperature, pressure, and density have been compiled as the STS-51C ascent atmospheric data and are presented in Table 4. The vertical structure of temperature and dew-point temperature for the STS-51C ascent are shown graphically versus altitude in Figure 10.

The atmospheric thermodynamic parameters of temperature, pressure, and density, measured during STS-51C launch below 60,000 ft (18,288 m) were all within 5 percent of their respective PRA-63 [19] annual values. All these parameters stayed within 18 percent of their respective PRA-63 values, at all levels of measurement. Tropospheric and stratospheric temperatures were generally cooler than the PRA-63 values, while tropospheric densities were greater than PRA-63 values. Stratospheric and Mesospheric pressure and density values remained less than the PRA-63 model values.

E. SRB Upper Air and Surface Measurements

As has been mentioned in the introduction, since there was no ship available, an SRB descent atmospheric data tape has not been constructed. The tabular values for the ascent atmospheric tape as presented in Table 5 should be used for SRB descent/impact studies since it is the closest measured data source.

TABLE 1. SELECTED ATMOSPHERIC OBSERVATIONS FOR THE FLIGHT TESTS OF THE SPACE SHUTTLE VEHICLES

Vehicle Data[h]				Surface Observations					Inflight Conditions Max. Wind Below 60,000 ft			Count Down and Launch Comments of Meteorological Significance
				Thermodynamic[a]			Wind[b]					
Seq. No.	Vehicle No.	Launch Date	Time (EST) Nearest Minute	Press.[c] N/cm^2	Temp. (°C)	Rel. Hum. (%)	Speed (ft/sec)	Dir. (deg)	Alt. (ft)	Speed (ft/sec)	Dir. (deg)	
1	STS-1 Columbia	4/12/81	0700	10.234[d]	21	82	11.8 15.2	125 120	44,300	98	250	
2	STS-2 Columbia	11/12/81	1010	10.166	23	61	27.0 27.0	345 355	36,300	158	286	
3	STS-3 Columbia	3/22/82	1100	10.160	24	71	7.0[e] 8.0[e]	50[e] 145[e]	45,000	119	250	Wind directional change observed at Pad just prior to L+0. Onset of sea breeze.
4	STS-4 Columbia	6/27/82	1100[f]	10.200	29	70	5.8[g] 4.9[g]	133[g] 141[g]	47,900	37	329	
5	STS-5 Columbia	11/11/82	0719	10.227	22	68	22.0 35.0	90 90	40,600	146	336	
6	STS-6 Challenger	4/4/83	1330	10.183	23	55	12.7 16.4	63 55	46,100	155	277	
7	STS-7 Challenger	6/18/83	0733[f]	10.146	25	80	5.9[e] 10.3[e]	10[e] 350[e]	45,900	76	278	
8	STS-8 Challenger	8/30/83	0232[f]	10.111	24	97	8.8 14.0	269 269	45,100	30	349	17 min countdown delay due to adverse weather conditions. Thunderstorms in area.
9	STS-9 (SL-1) Columbia	11/28/83	1100	10.153	24	83	19.1 32.0	183 190	47,100	117	252	
10	STS-11 (41-B) Challenger	2/3/84	0800	173	17	75	0.0 NA	0 NA	38,200	143	288	
11	STS-13 (41-C) Challenger	4/6/84	0858	10.149	16	56	21.5 18.6	320 275	37,700	176	289	
12	STS-41D Discovery	8/30/84	0842[f]	10.172	26	81	3.0 3.6	106 39	40,300	44	270	
13	STS-41G Challenger	10/5/84	0703[f]	10.210	23	60	16.5 14.8	73 58	40,600	78	303	
14	STS-51A Discovery	11/8/84	0715	10.227	20	59	23.0 31.1	24 10	33,100	131	272	1 day delay due to excessive wind loads, calculated at high altitudes.
15	STS-51C Discovery	1/24/85	1450	10.173	18	46	17.1 15.5	228 253	42,900	199	265	1 day delay due to extremely cold temperatures.

a. Pad 39A thermodynamic measurements taken at approximately 1.2 m (4 ft) above natural grade at camera site No. 3.
b. 1 min average prior to L+0 of 60 ft PLP (listed first) and 275 ft FSS winds measured above natural grade.
c. Pressure measurement applicable to 21 ft above MSL unless otherwise indicated.
d. Pressure measurement applicable to 14 ft above MSL.
e. 10 sec average prior to L+0.
f. Eastern Daylight Time.
g. 30 sec average prior to L+0.
h. All vehicles launched from LC39A.

TABLE 2. SYSTEMS USED TO MEASURE UPPER AIR WIND DATA FOR STS-51C ASCENT

	Date: January 24, 1985		Portion of Data Used			
	Release Time		Start		End	
Type of Data	Time (UT) (hr/min)	Time After L+0 (min)	Altitude m (ft)	Time After L+0 (min)	Altitude m (ft)	Time After L+0 (min)
FPS-16 Jimsphere	20:05	15	6 (21)	15	16,764 (55,000)	73
MSS Rawinsonde	19:54	4	17,069 (56,000)	60	29,870 (98,000)	102
Super-Loki Rocketsonde (Datasonde)	21:20	90	30,785 (101,000)	90	30,175 (99,000)	93
Super-Loki Rocketsonde (Robin)	20:50	60	83,515 (274,000)	60	31,090 (102,000)	68

TABLE 3. SURFACE OBSERVATIONS AT STS-51C LAUNCH TIME

Location[a]	Time After L+0 (min)	Pressure (MSL) N/cm^2 (psia)	Temperature °K (°F)	Dew Point °K (°F)	Relative Humidity (%)	Visibility km (miles)	Sky Cover: Cloud Amount**	Sky Cover: Cloud Type	Sky Cover: Height of Base Meters (ft)	Wind: Speed ft/sec (kt)	Wind: Direction (deg)
NASA Space Shuttle Runway X68[e] Winds Measured at 10.4 m (34 ft)	0	10.176 (14.759)	292.2 (66.2)	281.5 (47.0)	50	16 (10)	2 1	Strato-cumulus Cirrus	1219 (4000) 7620 (25,000)	16.9 (10.0)	220
CCAFS XMR[c] Surface Measurements	0	10.173 (14.755)	292.1 (66.0)	281.0 (46.0)	49	16 (10)	1 2	Strato-cumulus Cirrus	1219 (4000) 7620 (25,000)	10.1 (6.0)	230
Pad 39A[d] Lightpole SF 18.3 m (60.0 ft)	0	10.173* (14.755*)	290.8 (63.8)	279.2 (42.8)	46	-	-	-	-	17.1[b] (10.1)	228[b]
Pad 39A FSS (Top SE) 83.8 m (275 ft)	0	-	-	-	-	-	-	-	-	15.5[b] (9.2)	253[b]

*Pad 39A Camera Site 3 barometric pressure instrument appeared to be reading too high. Therefore, the KSC Shuttle runway station pressure value interpolated to 10.173 N/cm^2 at 21 ft above MSL was used as the L+0 pad atmospheric pressure measurement. Sea level pressure was 10.180 N/cm^2.

**2/10 total sky cover reported at both X68 and XMR.

a. Altitudes of measurements are above natural grade, except where noted.

b. Approximately 1 min average prior to L+0.

c. Balloon release site.

d. Pad 39A thermodynamic measurements are taken at camera site No. 3, approximately 6.4 m (21 ft) above MSL.

e. Official STS-51C sky observational site.

TABLE 4. STS-51C PRE-LAUNCH THROUGH LAUNCH KSC PAD 39A ATMOSPHERIC MEASUREMENTS[a]

Hourly Atmospheric Measurements								Sky Condition[b]			
24 January 1985 Time UT	Temp. (°F)	Dew Point (°F)	RH (%)	275' Level (SE)		60' Level (SE)		Clouds	Total Sky Cover	Vis. (mi)	Other Remarks
				WS Kt	WD°	WS Kt	WD°				
1300	39	36	90	8	256	4	236	Clear Skys	0/10	8	
1400	45	39	80	7	257	6	257	Scattered at 4000 and 25,000 ft	2/10	8	
1500	49	34	56	6	258	5	260	Scattered at 4000 and 25,000 ft	2/10	10	
1600	54	33	45	6	226	5	206	Scattered at 4000 and 25,000 ft	2/10	10	
1700	55	35	46	5	197	5	152	Scattered at 25,000 ft	2/10	10	
1800	61	40	48	7	275	8	226	Scattered at 2500, 4000 and 25,000 ft	2/10	10	
1900	63	42	47	12	251	9	245	Scattered at 4000 and 25,000 ft	2/10	10	
L+0[c] 1950	64	43	46	9	253	10	228	2/10 SC at 4000 ft 1/10 CI at 25,000 ft	2/10	10	

a. Hourly pad observations (obtained via MSFC/HOSC) averaged over 1 min, centered on the hour.

b. Sky observations taken at the Shuttle runway site X68.

c. L+0 PAD Wind and thermodynamic parameters obtained from HOSC strip charts. SE Anemometers used at 60 and 275 ft levels for L+0 wind conditions (approximately 1 min average prior to L+0). Pad 39A L+0 atmospheric pressure, at 21 ft (MSL), was 10.173 N/cm^2. Sea level pressure was 10.180 N/cm^2.

TABLE 5. STS-51C ASCENT ATMOSPHERIC DATA TAPE

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
000021	015	230	17.7	.1017+04	.1214+04	6.0
000100	016	235	17.3	.1014+04	.1212+04	5.9
000200	016	245	16.8	.1011+04	.1210+04	5.7
000300	017	248	16.4	.1007+04	.1208+04	5.6
000400	020	238	15.9	.1003+04	.1205+04	5.4
000500	020	238	15.4	.9999+03	.1203+04	5.3
000600	021	238	14.9	.9963+03	.1201+04	5.1
000700	021	237	14.4	.9927+03	.1198+04	5.0
000800	022	237	14.0	.9891+03	.1196+04	4.8
000900	022	237	13.5	.9855+03	.1194+04	4.7
001000	023	236	13.0	.9820+03	.1192+04	4.5
001100	023	236	12.7	.9785+03	.1188+04	4.5
001200	020	223	12.5	.9749+03	.1185+04	4.5
001300	023	228	12.2	.9714+03	.1182+04	4.5
001400	024	234	11.9	.9679+03	.1179+04	4.5
001500	022	236	11.7	.9644+03	.1176+04	4.5
001600	023	229	11.4	.9609+03	.1173+04	4.6
001700	022	222	11.1	.9574+03	.1169+04	4.6
001800	026	227	10.8	.9540+03	.1166+04	4.6
001900	027	228	10.6	.9505+03	.1163+04	4.6
002000	027	233	10.3	.9471+03	.1160+04	4.6
002100	025	233	10.0	.9436+03	.1157+04	4.5
002200	024	226	9.7	.9402+03	.1154+04	4.5
002300	026	225	9.4	.9367+03	.1151+04	4.4
002400	029	228	9.1	.9333+03	.1148+04	4.3
002500	026	233	8.9	.9299+03	.1145+04	4.3
002600	025	235	8.6	.9265+03	.1142+04	4.2
002700	024	229	8.3	.9231+03	.1139+04	4.1
002800	027	227	8.0	.9197+03	.1136+04	4.0
002900	029	232	7.7	.9163+03	.1133+04	4.0
003000	026	238	7.4	.9130+03	.1130+04	3.9
003100	025	239	7.3	.9096+03	.1126+04	3.8
003200	025	237	7.2	.9062+03	.1122+04	3.8
003300	025	242	7.1	.9029+03	.1118+04	3.7
003400	025	250	7.0	.8996+03	.1115+04	3.7
003500	023	243	7.0	.8962+03	.1111+04	3.6
003600	026	252	6.9	.8929+03	.1107+04	3.5
003700	026	265	6.8	.8896+03	.1103+04	3.5
003800	030	270	6.7	.8863+03	.1100+04	3.4
003900	033	280	6.6	.8831+03	.1096+04	3.4
004000	037	283	6.5	.8798+03	.1092+04	3.3
004100	043	281	6.7	.8766+03	.1087+04	3.4
004200	045	276	6.9	.8733+03	.1083+04	3.5
004300	046	275	7.1	.8701+03	.1078+04	3.6
004400	044	272	7.3	.8669+03	.1073+04	3.7
004500	041	275	7.5	.8637+03	.1068+04	3.8
004600	040	273	7.8	.8606+03	.1063+04	4.0
004700	042	277	8.0	.8574+03	.1059+04	4.1
004800	043	277	8.2	.8542+03	.1054+04	4.2
004900	043	277	8.4	.8511+03	.1049+04	4.3

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
005000	044	281	8.6	.8480+03	.1045+04	4.4
005100	043	280	8.4	.8449+03	.1041+04	4.4
005200	046	279	8.2	.8417+03	.1038+04	4.3
005300	048	281	8.0	.8386+03	.1035+04	4.3
005400	045	282	7.8	.8356+03	.1032+04	4.2
005500	046	279	7.6	.8325+03	.1029+04	4.1
005600	051	277	7.5	.8294+03	.1026+04	4.1
005700	053	281	7.3	.8264+03	.1023+04	4.1
005800	054	285	7.1	.8233+03	.1020+04	4.0
005900	050	287	6.9	.8203+03	.1017+04	3.9
006000	050	284	6.7	.8173+03	.1014+04	3.9
006100	052	282	6.6	.8143+03	.1010+04	3.8
006200	056	282	6.4	.8113+03	.1007+04	3.8
006300	055	285	6.3	.8083+03	.1004+04	3.8
006400	055	288	6.1	.8053+03	.1001+04	3.7
006500	055	285	5.9	.8023+03	.9976+03	3.6
006600	057	281	5.8	.7993+03	.9945+03	3.6
006700	061	282	5.7	.7964+03	.9913+03	3.5
006800	062	285	5.5	.7934+03	.9882+03	3.5
006900	063	286	5.4	.7905+03	.9851+03	3.4
007000	064	284	5.2	.7875+03	.9820+03	3.4
007100	068	285	5.1	.7846+03	.9787+03	3.3
007200	053	292	5.0	.7817+03	.9755+03	3.1
007300	070	286	4.9	.7788+03	.9723+03	3.0
007400	070	286	4.8	.7759+03	.9690+03	2.9
007500	070	287	4.7	.7730+03	.9658+03	2.8
007600	068	285	4.5	.7701+03	.9626+03	2.6
007700	067	285	4.4	.7673+03	.9595+03	2.5
007800	068	286	4.3	.7644+03	.9563+03	2.4
007900	070	288	4.2	.7616+03	.9531+03	2.2
008000	072	290	4.1	.7587+03	.9500+03	2.1
008100	073	287	4.0	.7559+03	.9468+03	2.0
008200	072	287	3.9	.7531+03	.9437+03	1.8
008300	074	286	3.8	.7503+03	.9406+03	1.7
008400	076	286	3.7	.7475+03	.9374+03	1.6
008500	077	283	3.6	.7447+03	.9343+03	1.5
008600	080	284	3.4	.7419+03	.9312+03	1.3
008700	080	283	3.3	.7391+03	.9281+03	1.2
008800	083	282	3.2	.7364+03	.9251+03	1.1
008900	082	283	3.1	.7336+03	.9220+03	.9
009000	083	280	3.0	.7309+03	.9189+03	.8
009100	083	281	2.9	.7282+03	.9158+03	.6
009200	083	279	2.8	.7254+03	.9127+03	.4
009300	084	276	2.7	.7227+03	.9096+03	.3
009400	085	279	2.6	.7200+03	.9065+03	.1
009500	081	278	2.6	.7173+03	.9035+03	-.1
009600	081	277	2.5	.7146+03	.9004+03	-.3
009700	080	278	2.4	.7119+03	.8973+03	-.5
009800	079	280	2.3	.7093+03	.8943+03	-.6
009900	077	278	2.2	.7066+03	.8913+03	-.8

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
010000	079	276	2.1	.7040+03	.8982+03	-1.0
010100	083	276	2.0	.7013+03	.8953+03	-1.2
010200	084	278	1.9	.6987+03	.8924+03	-1.4
010300	082	280	1.7	.6960+03	.8795+03	-1.5
010400	082	278	1.6	.6934+03	.8766+03	-1.7
010500	086	278	1.5	.6908+03	.8737+03	-1.9
010600	089	279	1.4	.6882+03	.8708+03	-2.1
010700	089	279	1.3	.6856+03	.8679+03	-2.3
010800	087	281	1.1	.6830+03	.8651+03	-2.4
010900	086	280	1.0	.6805+03	.8622+03	-2.6
011000	086	279	.9	.6779+03	.8594+03	-2.8
011100	088	277	.8	.6754+03	.8565+03	-2.9
011200	089	278	.6	.6728+03	.8537+03	-3.1
011300	091	279	.5	.6703+03	.8509+03	-3.2
011400	090	279	.4	.6677+03	.8481+03	-3.4
011500	089	278	.3	.6652+03	.8453+03	-3.5
011600	089	280	.1	.6627+03	.8426+03	-3.7
011700	086	277	.0	.6602+03	.8398+03	-3.8
011800	087	275	-.1	.6577+03	.8370+03	-4.0
011900	088	274	-.3	.6552+03	.8343+03	-4.1
012000	089	273	-.4	.6527+03	.8315+03	-4.3
012100	090	273	-.5	.6503+03	.8287+03	-4.5
012200	090	275	-.6	.6478+03	.8260+03	-4.7
012300	090	275	-.7	.6453+03	.8232+03	-4.9
012400	091	274	-.8	.6429+03	.8204+03	-5.1
012500	094	272	-.9	.6404+03	.8176+03	-5.3
012600	095	272	-1.1	.6380+03	.8149+03	-5.5
012700	095	274	-1.2	.6356+03	.8122+03	-5.7
012800	093	274	-1.3	.6332+03	.8094+03	-5.9
012900	092	274	-1.4	.6308+03	.8067+03	-6.1
013000	093	273	-1.5	.6284+03	.8040+03	-6.3
013100	094	274	-1.6	.6260+03	.8014+03	-6.5
013200	093	275	-1.8	.6236+03	.7988+03	-6.8
013300	091	274	-1.9	.6212+03	.7962+03	-7.0
013400	092	272	-2.1	.6188+03	.7936+03	-7.2
013500	093	273	-2.3	.6165+03	.7911+03	-7.4
013600	092	273	-2.4	.6141+03	.7885+03	-7.7
013700	091	274	-2.5	.6118+03	.7859+03	-7.9
013800	093	270	-2.7	.6094+03	.7834+03	-8.1
013900	094	271	-2.9	.6071+03	.7809+03	-8.4
014000	092	270	-3.0	.6048+03	.7783+03	-8.6
014100	094	269	-3.2	.6025+03	.7759+03	-8.7
014200	093	270	-3.3	.6002+03	.7734+03	-8.9
014300	090	269	-3.5	.5979+03	.7709+03	-9.0
014400	089	267	-3.7	.5956+03	.7684+03	-9.2
014500	091	269	-3.8	.5933+03	.7660+03	-9.3
014600	088	269	-4.0	.5910+03	.7636+03	-9.5
014700	087	269	-4.2	.5887+03	.7611+03	-9.6
014800	091	269	-4.4	.5865+03	.7587+03	-9.8
014900	088	271	-4.5	.5842+03	.7563+03	-9.9

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
015000	090	270	-4.7	.5820+03	.7539+03	-10.1
015100	092	272	-4.9	.5797+03	.7516+03	-10.2
015200	091	273	-5.2	.5775+03	.7494+03	-10.3
015300	091	271	-5.4	.5753+03	.7472+03	-10.4
015400	092	273	-5.7	.5730+03	.7451+03	-10.5
015500	090	275	-5.9	.5708+03	.7429+03	-10.6
015600	090	274	-6.2	.5686+03	.7407+03	-10.8
015700	091	275	-6.4	.5664+03	.7385+03	-10.9
015800	089	274	-6.7	.5642+03	.7364+03	-11.0
015900	089	276	-6.9	.5620+03	.7342+03	-11.1
016000	089	275	-7.2	.5599+03	.7321+03	-11.2
016100	092	274	-7.4	.5577+03	.7298+03	-11.3
016200	089	273	-7.7	.5555+03	.7276+03	-11.5
016300	089	273	-7.9	.5533+03	.7254+03	-11.6
016400	088	272	-8.1	.5512+03	.7232+03	-11.7
016500	089	273	-8.3	.5490+03	.7210+03	-11.8
016600	089	273	-8.6	.5469+03	.7189+03	-12.0
016700	091	272	-8.8	.5447+03	.7167+03	-12.1
016800	089	274	-9.0	.5426+03	.7145+03	-12.2
016900	090	275	-9.3	.5405+03	.7123+03	-12.4
017000	089	275	-9.5	.5384+03	.7102+03	-12.5
017100	092	275	-9.7	.5363+03	.7079+03	-12.7
017200	092	275	-9.9	.5341+03	.7057+03	-12.9
017300	092	276	-10.1	.5320+03	.7034+03	-13.1
017400	091	275	-10.3	.5299+03	.7012+03	-13.3
017500	093	274	-10.4	.5279+03	.6989+03	-13.5
017600	090	274	-10.6	.5258+03	.6967+03	-13.7
017700	092	271	-10.8	.5237+03	.6945+03	-13.9
017800	093	270	-11.0	.5217+03	.6922+03	-14.1
017900	094	269	-11.2	.5196+03	.6900+03	-14.3
018000	096	270	-11.4	.5176+03	.6878+03	-14.5
018100	098	269	-11.6	.5155+03	.6856+03	-14.6
018200	100	270	-11.8	.5135+03	.6833+03	-14.8
018300	102	270	-11.9	.5114+03	.6811+03	-14.9
018400	101	270	-12.1	.5094+03	.6789+03	-15.1
018500	104	271	-12.3	.5074+03	.6767+03	-15.2
018600	101	272	-12.5	.5054+03	.6745+03	-15.3
018700	103	272	-12.7	.5034+03	.6722+03	-15.5
018800	102	275	-12.8	.5014+03	.6701+03	-15.6
018900	102	275	-13.0	.4994+03	.6679+03	-15.8
019000	105	276	-13.2	.4974+03	.6657+03	-15.9
019100	102	277	-13.3	.4954+03	.6634+03	-16.2
019200	104	276	-13.5	.4934+03	.6611+03	-16.5
019300	106	277	-13.6	.4915+03	.6589+03	-16.9
019400	104	277	-13.8	.4895+03	.6566+03	-17.2
019500	105	276	-13.9	.4876+03	.6544+03	-17.5
019600	107	276	-14.0	.4856+03	.6521+03	-17.8
019700	107	277	-14.2	.4837+03	.6499+03	-18.1
019800	106	276	-14.3	.4818+03	.6477+03	-18.5
019900	110	277	-14.5	.4798+03	.6455+03	-18.8

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
020000	111	277	-14.6	.4779+03	.6433+03	-19.1
020100	108	276	-14.8	.4760+03	.6413+03	-19.3
020200	109	274	-15.1	.4741+03	.6393+03	-19.5
020300	110	277	-15.3	.4722+03	.6373+03	-19.7
020400	108	275	-15.5	.4703+03	.6353+03	-19.9
020500	107	275	-15.7	.4684+03	.6333+03	-20.1
020600	108	274	-16.0	.4665+03	.6313+03	-20.3
020700	108	277	-16.2	.4646+03	.6294+03	-20.5
020800	105	278	-16.4	.4628+03	.6274+03	-20.7
020900	105	276	-16.7	.4609+03	.6255+03	-20.9
021000	105	276	-16.9	.4591+03	.6235+03	-21.1
021100	106	276	-17.1	.4572+03	.6215+03	-21.2
021200	104	279	-17.3	.4554+03	.6194+03	-21.4
021300	105	276	-17.5	.4535+03	.6174+03	-21.5
021400	105	279	-17.7	.4517+03	.6153+03	-21.7
021500	103	278	-17.8	.4498+03	.6133+03	-21.8
021600	105	276	-18.0	.4480+03	.6113+03	-21.9
021700	107	279	-18.2	.4462+03	.6092+03	-22.1
021800	104	277	-18.4	.4444+03	.6072+03	-22.2
021900	103	276	-18.6	.4426+03	.6052+03	-22.4
022000	106	278	-18.8	.4408+03	.6032+03	-22.5
022100	106	277	-19.0	.4390+03	.6013+03	-22.8
022200	108	280	-19.2	.4372+03	.5994+03	-23.0
022300	107	279	-19.5	.4354+03	.5975+03	-23.3
022400	107	277	-19.7	.4337+03	.5955+03	-23.6
022500	107	276	-19.9	.4319+03	.5936+03	-23.8
022600	113	274	-20.1	.4301+03	.5917+03	-24.1
022700	118	273	-20.3	.4284+03	.5898+03	-24.4
022800	121	272	-20.6	.4266+03	.5880+03	-24.7
022900	128	271	-20.8	.4249+03	.5861+03	-24.9
023000	128	269	-21.0	.4232+03	.5842+03	-25.2
023100	131	268	-21.0	.4214+03	.5818+03	-25.7
023200	131	267	-20.9	.4197+03	.5793+03	-26.3
023300	132	265	-20.9	.4180+03	.5769+03	-26.8
023400	133	265	-20.9	.4163+03	.5745+03	-27.4
023500	133	266	-20.8	.4145+03	.5721+03	-27.9
023600	131	264	-20.8	.4128+03	.5697+03	-28.5
023700	132	265	-20.8	.4112+03	.5673+03	-29.0
023800	131	264	-20.8	.4095+03	.5649+03	-29.6
023900	132	264	-20.7	.4078+03	.5625+03	-30.1
024000	134	262	-20.7	.4061+03	.5602+03	-30.7
024100	133	263	-20.9	.4044+03	.5583+03	-30.9
024200	134	264	-21.1	.4028+03	.5564+03	-31.1
024300	132	265	-21.2	.4011+03	.5545+03	-31.4
024400	137	263	-21.4	.3995+03	.5526+03	-31.6
024500	137	263	-21.6	.3978+03	.5507+03	-31.8
024600	140	262	-21.8	.3962+03	.5489+03	-32.0
024700	139	263	-22.0	.3946+03	.5470+03	-32.2
024800	141	264	-22.1	.3929+03	.5451+03	-32.5
024900	143	264	-22.3	.3913+03	.5433+03	-32.7

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
025000	142	263	-22.5	.3897+03	.5415+03	-34.9
025100	142	263	-22.7	.3881+03	.5397+03	-33.1
025200	144	261	-22.9	.3865+03	.5379+03	-33.3
025300	141	264	-23.1	.3849+03	.5361+03	-33.5
025400	141	262	-23.3	.3833+03	.5343+03	-33.7
025500	143	263	-23.5	.3817+03	.5326+03	-33.9
025600	140	263	-23.8	.3801+03	.5308+03	-34.1
025700	142	263	-24.0	.3785+03	.5291+03	-34.3
025800	145	263	-24.2	.3770+03	.5273+03	-34.5
025900	143	264	-24.4	.3754+03	.5256+03	-34.7
026000	146	263	-24.6	.3739+03	.5239+03	-34.9
026100	147	264	-24.8	.3723+03	.5220+03	-35.0
026200	147	263	-24.9	.3707+03	.5201+03	-35.2
026300	148	263	-25.1	.3692+03	.5183+03	-35.3
026400	148	265	-25.2	.3677+03	.5165+03	-35.4
026500	144	267	-25.4	.3661+03	.5147+03	-35.5
026600	145	264	-25.6	.3646+03	.5128+03	-35.7
026700	145	266	-25.7	.3631+03	.5110+03	-35.8
026800	145	265	-25.9	.3616+03	.5092+03	-35.9
026900	147	264	-26.0	.3600+03	.5074+03	-36.1
027000	147	263	-26.2	.3585+03	.5056+03	-36.2
027100	146	265	-26.4	.3570+03	.5039+03	-36.2
027200	146	266	-26.5	.3555+03	.5021+03	-36.2
027300	147	268	-26.7	.3540+03	.5003+03	-36.3
027400	150	265	-26.9	.3526+03	.4986+03	-36.3
027500	150	266	-27.0	.3511+03	.4968+03	-36.3
027600	151	269	-27.2	.3496+03	.4951+03	-36.3
027700	150	269	-27.4	.3481+03	.4934+03	-36.3
027800	151	269	-27.6	.3467+03	.4916+03	-36.4
027900	151	269	-27.7	.3452+03	.4899+03	-36.4
028000	152	268	-27.9	.3438+03	.4882+03	-36.4
028100	153	269	-28.2	.3423+03	.4868+03	-36.7
028200	153	269	-28.6	.3409+03	.4854+03	-37.1
028300	153	269	-28.9	.3394+03	.4840+03	-37.4
028400	153	269	-29.3	.3380+03	.4826+03	-37.7
028500	153	268	-29.6	.3365+03	.4813+03	-38.0
028600	152	268	-29.9	.3351+03	.4799+03	-38.4
028700	152	267	-30.3	.3337+03	.4785+03	-38.7
028800	152	267	-30.6	.3323+03	.4772+03	-39.0
028900	155	266	-31.0	.3309+03	.4758+03	-39.4
029000	154	266	-31.3	.3295+03	.4745+03	-39.7
029100	154	266	-31.6	.3280+03	.4730+03	-40.0
029200	156	266	-31.9	.3266+03	.4716+03	-40.2
029300	157	266	-32.2	.3252+03	.4702+03	-40.5
029400	156	265	-32.5	.3238+03	.4688+03	-40.8
029500	156	264	-32.8	.3224+03	.4674+03	-41.0
029600	156	264	-33.2	.3210+03	.4659+03	-41.3
029700	155	264	-33.5	.3197+03	.4645+03	-41.6
029800	156	264	-33.8	.3183+03	.4631+03	-41.9
029900	154	264	-34.1	.3169+03	.4618+03	-42.1

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
030000	154	264	-34.4	.3156+03	.4604+03	-42.4
030100	154	263	-34.7	.3142+03	.4589+03	-42.6
030200	153	264	-35.0	.3128+03	.4575+03	-42.8
030300	153	264	-35.3	.3115+03	.4561+03	-43.0
030400	155	263	-35.6	.3101+03	.4547+03	-43.2
030500	157	265	-35.9	.3087+03	.4533+03	-43.3
030600	158	264	-36.2	.3074+03	.4519+03	-43.5
030700	158	266	-36.5	.3061+03	.4505+03	-43.7
030800	159	266	-36.8	.3047+03	.4491+03	-43.9
030900	159	265	-37.1	.3034+03	.4477+03	-44.1
031000	158	266	-37.4	.3021+03	.4463+03	-44.3
031100	160	266	-37.7	.3007+03	.4450+03	-44.7
031200	161	265	-38.1	.2994+03	.4437+03	-45.0
031300	162	266	-38.4	.2981+03	.4424+03	-45.4
031400	163	265	-38.8	.2968+03	.4410+03	-45.8
031500	164	264	-39.1	.2955+03	.4397+03	-46.1
031600	166	265	-39.4	.2942+03	.4384+03	-46.5
031700	166	266	-39.8	.2929+03	.4371+03	-46.9
031800	165	265	-40.1	.2916+03	.4359+03	-47.3
031900	164	267	-40.5	.2903+03	.4346+03	-47.6
032000	163	266	-40.8	.2890+03	.4333+03	-48.0
032100	162	268	-41.2	.2877+03	.4320+03	-48.3
032200	162	266	-41.6	.2864+03	.4308+03	-48.7
032300	162	267	-41.9	.2851+03	.4296+03	-49.0
032400	161	267	-42.3	.2839+03	.4283+03	-49.4
032500	163	266	-42.7	.2826+03	.4271+03	-49.7
032600	161	267	-43.1	.2813+03	.4259+03	-50.0
032700	161	268	-43.5	.2800+03	.4247+03	-50.4
032800	161	266	-43.8	.2788+03	.4235+03	-50.7
032900	162	267	-44.2	.2775+03	.4223+03	-51.1
033000	162	267	-44.6	.2763+03	.4211+03	-51.4
033100	163	266	-44.8	.2750+03	.4195+03	-51.6
033200	162	267	-45.0	.2738+03	.4180+03	-51.8
033300	163	266	-45.2	.2725+03	.4164+03	-52.0
033400	162	268	-45.4	.2713+03	.4149+03	-52.2
033500	162	266	-45.5	.2701+03	.4133+03	-52.4
033600	161	267	-45.7	.2688+03	.4118+03	-52.6
033700	162	267	-45.9	.2676+03	.4103+03	-52.8
033800	162	266	-46.1	.2664+03	.4088+03	-53.0
033900	161	266	-46.3	.2652+03	.4072+03	-53.2
034000	161	265	-46.5	.2640+03	.4057+03	-53.4
034100	161	267	-46.6	.2628+03	.4041+03	-53.5
034200	162	267	-46.8	.2616+03	.4026+03	-53.7
034300	162	266	-46.9	.2604+03	.4010+03	-53.8
034400	163	267	-47.1	.2592+03	.3994+03	-54.0
034500	163	266	-47.3	.2580+03	.3979+03	-54.1
034600	162	268	-47.4	.2568+03	.3963+03	-54.2
034700	161	267	-47.5	.2556+03	.3947+03	-54.4
034800	162	267	-47.7	.2545+03	.3932+03	-54.5
034900	163	265	-47.8	.2533+03	.3917+03	-54.7

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
035000	163	265	-48.0	.2522+03	.3901+03	-54.8
035100	165	264	-48.2	.2510+03	.3886+03	-54.9
035200	163	266	-48.4	.2498+03	.3872+03	-55.1
035300	163	263	-48.5	.2487+03	.3857+03	-55.2
035400	164	264	-48.7	.2475+03	.3842+03	-55.4
035500	163	264	-48.9	.2464+03	.3928+03	-55.5
035600	164	263	-49.1	.2453+03	.3813+03	-55.7
035700	165	262	-49.3	.2441+03	.3798+03	-55.8
035800	165	262	-49.4	.2430+03	.3784+03	-56.0
035900	166	262	-49.6	.2419+03	.3770+03	-56.1
036000	167	261	-49.8	.2408+03	.3755+03	-56.3
036100	165	264	-50.0	.2397+03	.3741+03	-56.5
036200	166	262	-50.2	.2385+03	.3727+03	-56.7
036300	165	262	-50.4	.2374+03	.3714+03	-56.9
036400	164	261	-50.6	.2363+03	.3700+03	-57.1
036500	164	263	-50.8	.2352+03	.3686+03	-57.2
036600	163	263	-51.1	.2341+03	.3673+03	-57.4
036700	166	260	-51.3	.2331+03	.3659+03	-57.6
036800	165	260	-51.5	.2320+03	.3646+03	-57.8
036900	166	260	-51.7	.2309+03	.3632+03	-58.0
037000	165	260	-51.9	.2298+03	.3619+03	-58.2
037100	165	260	-52.1	.2288+03	.3605+03	-58.4
037200	166	258	-52.3	.2277+03	.3591+03	-58.6
037300	167	259	-52.5	.2266+03	.3578+03	-58.8
037400	166	259	-52.7	.2255+03	.3564+03	-59.0
037500	165	258	-52.9	.2245+03	.3551+03	-59.1
037600	163	258	-53.1	.2234+03	.3537+03	-59.3
037700	164	258	-53.3	.2224+03	.3524+03	-59.5
037800	163	258	-53.5	.2213+03	.3510+03	-59.7
037900	163	257	-53.7	.2203+03	.3497+03	-59.9
038000	160	258	-53.9	.2193+03	.3484+03	-60.1
038100	159	259	-54.1	.2182+03	.3470+03	-60.3
038200	160	258	-54.2	.2172+03	.3456+03	-60.4
038300	157	258	-54.4	.2162+03	.3443+03	-60.6
038400	157	257	-54.6	.2152+03	.3429+03	-60.8
038500	157	259	-54.7	.2141+03	.3416+03	-60.9
038600	158	258	-54.9	.2131+03	.3402+03	-61.1
038700	156	258	-55.1	.2121+03	.3389+03	-61.3
038800	156	259	-55.3	.2111+03	.3375+03	-61.5
038900	156	259	-55.4	.2101+03	.3362+03	-61.6
039000	157	259	-55.6	.2091+03	.3349+03	-61.8
039100	157	260	-55.8	.2081+03	.3337+03	-62.0
039200	157	259	-56.1	.2071+03	.3324+03	-62.3
039300	157	258	-56.3	.2061+03	.3312+03	-62.5
039400	158	256	-56.6	.2052+03	.3300+03	-62.7
039500	158	255	-56.8	.2042+03	.3288+03	-62.9
039600	159	254	-57.1	.2032+03	.3276+03	-63.2
039700	161	255	-57.3	.2022+03	.3264+03	-63.4
039800	162	252	-57.6	.2013+03	.3253+03	-63.6
039900	162	252	-57.8	.2003+03	.3241+03	-63.9

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
040000	162	254	-58.1	.1993+03	.3229+03	-64.1
040100	163	251	-58.2	.1984+03	.3215+03	-64.2
040200	163	253	-58.3	.1974+03	.3201+03	-64.4
040300	169	252	-58.4	.1965+03	.3187+03	-64.5
040400	171	252	-58.5	.1955+03	.3173+03	-64.7
040500	175	253	-58.5	.1946+03	.3159+03	-64.8
040600	175	255	-58.6	.1936+03	.3145+03	-64.9
040700	181	253	-58.7	.1927+03	.3131+03	-65.1
040800	181	254	-58.8	.1918+03	.3117+03	-65.2
040900	182	254	-58.9	.1909+03	.3104+03	-65.4
041000	184	254	-59.0	.1899+03	.3090+03	-65.5
041100	184	253	-59.1	.1890+03	.3077+03	-9999.
041200	185	253	-59.2	.1881+03	.3063+03	-9999.
041300	191	252	-59.3	.1872+03	.3050+03	-9999.
041400	191	254	-59.4	.1863+03	.3036+03	-9999.
041500	192	255	-59.5	.1854+03	.3023+03	-9999.
041600	192	256	-59.6	.1845+03	.3010+03	-9999.
041700	193	257	-59.7	.1836+03	.2997+03	-9999.
041800	194	256	-59.8	.1827+03	.2984+03	-9999.
041900	191	259	-59.9	.1818+03	.2971+03	-9999.
042000	188	259	-60.0	.1810+03	.2958+03	-9999.
042100	187	259	-60.0	.1801+03	.2944+03	-9999.
042200	186	260	-60.1	.1792+03	.2930+03	-9999.
042300	187	261	-60.1	.1783+03	.2916+03	-9999.
042400	188	262	-60.1	.1775+03	.2902+03	-9999.
042500	190	263	-60.1	.1766+03	.2889+03	-9999.
042600	192	262	-60.2	.1758+03	.2875+03	-9999.
042700	194	263	-60.2	.1749+03	.2862+03	-9999.
042800	197	264	-60.2	.1741+03	.2848+03	-9999.
042900	199	265	-60.3	.1732+03	.2835+03	-9999.
043000	199	265	-60.3	.1724+03	.2821+03	-9999.
043100	199	265	-60.3	.1715+03	.2807+03	-9999.
043200	199	266	-60.2	.1707+03	.2793+03	-9999.
043300	198	268	-60.2	.1699+03	.2779+03	-9999.
043400	197	267	-60.1	.1691+03	.2765+03	-9999.
043500	195	267	-60.1	.1682+03	.2751+03	-9999.
043600	192	267	-60.1	.1674+03	.2737+03	-9999.
043700	190	266	-60.0	.1666+03	.2723+03	-9999.
043800	189	266	-60.0	.1658+03	.2710+03	-9999.
043900	189	266	-59.9	.1650+03	.2696+03	-9999.
044000	188	266	-59.9	.1642+03	.2683+03	-9999.
044100	187	266	-59.7	.1634+03	.2668+03	-9999.
044200	187	265	-59.6	.1626+03	.2653+03	-9999.
044300	187	265	-59.4	.1618+03	.2638+03	-9999.
044400	188	263	-59.3	.1611+03	.2623+03	-9999.
044500	188	264	-59.1	.1603+03	.2609+03	-9999.
044600	187	265	-58.9	.1595+03	.2594+03	-9999.
044700	185	265	-58.8	.1587+03	.2580+03	-9999.
044800	181	265	-58.6	.1580+03	.2565+03	-9999.
044900	178	265	-58.5	.1572+03	.2551+03	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
045000	175	266	-58.3	.1565+03	.2537+03	-9999.
045100	174	266	-58.8	.1557+03	.2531+03	-9999.
045200	174	265	-59.3	.1549+03	.2525+03	-9999.
045300	173	266	-59.9	.1542+03	.2518+03	-9999.
045400	173	266	-60.4	.1534+03	.2512+03	-9999.
045500	172	265	-60.9	.1527+03	.2506+03	-9999.
045600	171	266	-61.4	.1519+03	.2500+03	-9999.
045700	171	264	-61.9	.1512+03	.2494+03	-9999.
045800	170	265	-62.5	.1505+03	.2488+03	-9999.
045900	169	264	-63.0	.1497+03	.2482+03	-9999.
046000	168	264	-63.5	.1490+03	.2476+03	-9999.
046100	167	264	-64.1	.1483+03	.2471+03	-9999.
046200	167	263	-64.7	.1475+03	.2465+03	-9999.
046300	166	263	-65.3	.1468+03	.2460+03	-9999.
046400	166	264	-65.9	.1460+03	.2454+03	-9999.
046500	164	264	-66.4	.1453+03	.2449+03	-9999.
046600	164	264	-67.0	.1446+03	.2444+03	-9999.
046700	164	263	-67.6	.1439+03	.2439+03	-9999.
046800	163	264	-68.2	.1431+03	.2433+03	-9999.
046900	164	262	-68.8	.1424+03	.2428+03	-9999.
047000	164	262	-69.4	.1417+03	.2423+03	-9999.
047100	164	262	-69.7	.1410+03	.2414+03	-9999.
047200	164	262	-69.9	.1403+03	.2405+03	-9999.
047300	165	262	-70.2	.1396+03	.2396+03	-9999.
047400	165	262	-70.5	.1388+03	.2386+03	-9999.
047500	165	262	-70.7	.1381+03	.2377+03	-9999.
047600	165	262	-71.0	.1374+03	.2368+03	-9999.
047700	166	262	-71.3	.1367+03	.2360+03	-9999.
047800	167	262	-71.6	.1360+03	.2351+03	-9999.
047900	166	262	-71.8	.1353+03	.2342+03	-9999.
048000	165	262	-72.1	.1346+03	.2333+03	-9999.
048100	162	264	-72.2	.1339+03	.2322+03	-9999.
048200	160	264	-72.3	.1333+03	.2312+03	-9999.
048300	159	265	-72.5	.1326+03	.2301+03	-9999.
048400	157	266	-72.6	.1319+03	.2291+03	-9999.
048500	156	266	-72.7	.1312+03	.2280+03	-9999.
048600	154	266	-72.8	.1305+03	.2270+03	-9999.
048700	154	266	-72.9	.1299+03	.2260+03	-9999.
048800	154	266	-73.1	.1292+03	.2249+03	-9999.
048900	155	267	-73.2	.1285+03	.2239+03	-9999.
049000	154	266	-73.3	.1279+03	.2229+03	-9999.
049100	153	267	-73.4	.1272+03	.2219+03	-9999.
049200	152	267	-73.6	.1265+03	.2209+03	-9999.
049300	152	266	-73.7	.1259+03	.2199+03	-9999.
049400	153	267	-73.9	.1252+03	.2189+03	-9999.
049500	153	266	-74.0	.1246+03	.2179+03	-9999.
049600	153	266	-74.1	.1239+03	.2170+03	-9999.
049700	151	267	-74.3	.1233+03	.2160+03	-9999.
049800	151	268	-74.4	.1227+03	.2150+03	-9999.
049900	151	266	-74.6	.1220+03	.2141+03	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
050000	151	267	-74.7	.1214+03	.2131+03	-9999.
050100	149	267	-74.7	.1208+03	.2121+03	-9999.
050200	148	263	-74.8	.1201+03	.2110+03	-9999.
050300	147	261	-74.8	.1195+03	.2100+03	-9999.
050400	146	262	-74.9	.1189+03	.2089+03	-9999.
050500	146	262	-74.9	.1183+03	.2079+03	-9999.
050600	148	258	-75.0	.1177+03	.2069+03	-9999.
050700	150	258	-75.0	.1170+03	.2058+03	-9999.
050800	149	260	-75.1	.1164+03	.2048+03	-9999.
050900	149	260	-75.1	.1158+03	.2038+03	-9999.
051000	150	259	-75.2	.1152+03	.2028+03	-9999.
051100	151	258	-75.0	.1146+03	.2015+03	-9999.
051200	152	260	-74.8	.1140+03	.2003+03	-9999.
051300	154	259	-74.6	.1134+03	.1991+03	-9999.
051400	155	258	-74.4	.1129+03	.1979+03	-9999.
051500	155	259	-74.3	.1123+03	.1966+03	-9999.
051600	155	259	-74.1	.1117+03	.1954+03	-9999.
051700	156	259	-73.9	.1111+03	.1942+03	-9999.
051800	157	258	-73.7	.1105+03	.1930+03	-9999.
051900	158	259	-73.5	.1100+03	.1919+03	-9999.
052000	160	258	-73.3	.1094+03	.1907+03	-9999.
052100	161	258	-73.5	.1088+03	.1899+03	-9999.
052200	162	258	-73.7	.1083+03	.1891+03	-9999.
052300	163	258	-73.9	.1077+03	.1883+03	-9999.
052400	165	258	-74.1	.1071+03	.1875+03	-9999.
052500	168	260	-74.2	.1066+03	.1867+03	-9999.
052600	171	262	-74.4	.1060+03	.1859+03	-9999.
052700	171	264	-74.6	.1055+03	.1851+03	-9999.
052800	169	266	-74.8	.1049+03	.1843+03	-9999.
052900	166	268	-75.0	.1044+03	.1835+03	-9999.
053000	163	270	-75.2	.1038+03	.1827+03	-9999.
053100	161	271	-75.4	.1033+03	.1820+03	-9999.
053200	159	270	-75.7	.1028+03	.1813+03	-9999.
053300	155	270	-75.9	.1022+03	.1805+03	-9999.
053400	152	271	-76.1	.1017+03	.1798+03	-9999.
053500	151	273	-76.3	.1012+03	.1791+03	-9999.
053600	151	273	-76.6	.1006+03	.1783+03	-9999.
053700	149	274	-76.8	.1001+03	.1776+03	-9999.
053800	146	275	-77.0	.9957+02	.1769+03	-9999.
053900	142	275	-77.3	.9905+02	.1762+03	-9999.
054000	137	275	-77.5	.9853+02	.1754+03	-9999.
054100	133	275	-77.4	.9801+02	.1744+03	-9999.
054200	130	275	-77.3	.9750+02	.1734+03	-9999.
054300	127	273	-77.2	.9699+02	.1724+03	-9999.
054400	126	271	-77.1	.9648+02	.1714+03	-9999.
054500	124	270	-77.0	.9598+02	.1705+03	-9999.
054600	121	270	-76.9	.9547+02	.1695+03	-9999.
054700	120	269	-76.8	.9497+02	.1685+03	-9999.
054800	119	266	-76.7	.9448+02	.1675+03	-9999.
054900	118	266	-76.6	.9398+02	.1666+03	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
055000	118	265	-76.5	.9349+02	.1656+03	-9999.
056000	115	270	-75.6	.8870+02	.1564+03	-9999.
057000	112	275	-76.4	.8417+02	.1490+03	-9999.
058000	104	275	-77.1	.7985+02	.1419+03	-9999.
059000	101	275	-77.4	.7575+02	.1348+03	-9999.
060000	098	275	-78.1	.7185+02	.1283+03	-9999.
061000	094	277	-78.8	.6814+02	.1221+03	-9999.
062000	088	280	-77.6	.6463+02	.1151+03	-9999.
063000	083	283	-76.2	.6132+02	.1085+03	-9999.
064000	077	284	-74.7	.5820+02	.1023+03	-9999.
065000	072	286	-73.2	.5525+02	.9626+02	-9999.
066000	067	284	-72.5	.5248+02	.9112+02	-9999.
067000	063	281	-71.8	.4985+02	.8625+02	-9999.
068000	060	278	-71.2	.4736+02	.8170+02	-9999.
069000	057	272	-71.0	.4500+02	.7755+02	-9999.
070000	054	265	-70.8	.4276+02	.7362+02	-9999.
071000	054	259	-71.6	.4063+02	.7023+02	-9999.
072000	055	255	-70.9	.3860+02	.6649+02	-9999.
073000	056	271	-69.4	.3669+02	.6273+02	-9999.
074000	054	269	-66.2	.3489+02	.5873+02	-9999.
075000	052	261	-62.7	.3320+02	.5496+02	-9999.
076000	047	257	-62.5	.3162+02	.5229+02	-9999.
077000	039	258	-61.7	.3011+02	.4961+02	-9999.
078000	032	247	-57.7	.2869+02	.4639+02	-9999.
079000	025	261	-56.1	.2735+02	.4390+02	-9999.
080000	025	272	-56.6	.2608+02	.4196+02	-9999.
081000	026	284	-56.5	.2487+02	.3999+02	-9999.
082000	027	299	-55.6	.2372+02	.3798+02	-9999.
083000	029	320	-53.6	.2262+02	.3589+02	-9999.
084000	023	341	-53.7	.2158+02	.3426+02	-9999.
085000	016	356	-54.4	.2059+02	.3279+02	-9999.
086000	014	007	-53.8	.1965+02	.3121+02	-9999.
087000	014	010	-52.8	.1875+02	.2964+02	-9999.
088000	014	013	-52.1	.1789+02	.2819+02	-9999.
089000	014	014	-52.0	.1708+02	.2691+02	-9999.
090000	014	015	-51.9	.1630+02	.2567+02	-9999.
091000	014	017	-51.8	.1556+02	.2449+02	-9999.
092000	013	025	-51.4	.1485+02	.2333+02	-9999.
093000	012	036	-51.0	.1419+02	.2224+02	-9999.
094000	013	064	-51.3	.1353+02	.2125+02	-9999.
095000	013	069	-50.9	.1292+02	.2025+02	-9999.
096000	011	071	-50.1	.1234+02	.1927+02	-9999.
097000	009	062	-48.6	.1178+02	.1829+02	-9999.
098000	008	033	-46.4	.1126+02	.1730+02	-9999.
099000	015	033	-45.0	.1081+02	.1651+02	-9999.
100000	018	033	-44.0	.1036+02	.1578+02	-9999.
101000	021	034	-43.0	.9970+01	.1509+02	-9999.
102000	015	034	-41.7	.9570+01	.1441+02	-9999.
103000	023	033	-41.2	.9158+01	.1376+02	-9999.
104000	025	023	-40.6	.8761+01	.1312+02	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
105000	030	036	-40.2	.8383+01	.1254+02	-9999.
106000	023	036	-41.2	.8020+01	.1204+02	-9999.
107000	038	014	-42.9	.7673+01	.1161+02	-9999.
108000	042	019	-40.2	.7341+01	.1098+02	-9999.
109000	040	032	-41.2	.7025+01	.1055+02	-9999.
110000	032	028	-39.2	.6720+01	.1000+02	-9999.
111000	040	057	-41.2	.6432+01	.9658+01	-9999.
112000	027	069	-42.2	.6153+01	.9279+01	-9999.
113000	032	060	-44.6	.5885+01	.8968+01	-9999.
114000	043	063	-42.9	.5626+01	.8512+01	-9999.
115000	038	066	-38.6	.5393+01	.7993+01	-9999.
116000	038	072	-35.3	.5155+01	.7549+01	-9999.
117000	025	091	-31.2	.4941+01	.7113+01	-9999.
118000	025	083	-31.6	.4737+01	.6832+01	-9999.
119000	040	063	-29.7	.4540+01	.6496+01	-9999.
120000	055	060	-28.8	.4354+01	.6208+01	-9999.
121000	067	066	-32.2	.4172+01	.6031+01	-9999.
122000	062	070	-30.2	.3998+01	.5732+01	-9999.
123000	047	083	-28.7	.3835+01	.5465+01	-9999.
124000	043	102	-30.1	.3678+01	.5271+01	-9999.
125000	031	115	-20.3	.3529+01	.4863+01	-9999.
126000	021	091	-19.1	.3390+01	.4649+01	-9999.
127000	015	053	-21.2	.3255+01	.4501+01	-9999.
128000	010	032	-21.7	.3126+01	.4331+01	-9999.
129000	021	040	-22.2	.3001+01	.4166+01	-9999.
130000	038	051	-15.7	.2882+01	.3900+01	-9999.
131000	048	053	-15.0	.2769+01	.3737+01	-9999.
132000	050	051	-19.4	.2660+01	.3653+01	-9999.
133000	050	059	-10.9	.2557+01	.3397+01	-9999.
134000	054	072	-7.2	.2460+01	.3221+01	-9999.
135000	048	073	-2.0	.2367+01	.3040+01	-9999.
136000	052	052	-3.7	.2279+01	.2946+01	-9999.
137000	062	036	-2.7	.2194+01	.2827+01	-9999.
138000	059	052	-3.4	.2113+01	.2728+01	-9999.
139000	050	068	-8.3	.2033+01	.2675+01	-9999.
140000	057	088	-4.4	.1957+01	.2536+01	-9999.
141000	069	089	1.2	.1885+01	.2393+01	-9999.
142000	081	081	-3.6	.1815+01	.2346+01	-9999.
143000	087	074	-8.3	.1[illegible]	.2298+01	-9999.
144000	082	070	-8.2	.1[illegible]	.2209+01	-9999.
145000	072	064	-7.1	.1[illegible]	.2118+01	-9999.
146000	064	063	-7.1	.1[illegible]	.2038+01	-9999.
147000	059	074	-7.6	.1498+01	.1961+01	-9999.
148000	060	083	-9.1	.1442+01	.1902+01	-9999.
149000	064	082	-9.2	.1387+01	.1831+01	-9999.
150000	064	078	-8.2	.1334+01	.1754+01	-9999.
151000	064	076	-2.4	.1285+01	.1653+01	-9999.
152000	062	082	-3.7	.1237+01	.1599+01	-9999.
153000	064	089	-11.2	.1190+01	.1583+01	-9999.
154000	069	098	-9.5	.1145+01	.1507+01	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
155000	076	105	-7.2	.1102+01	.1443+01	-9999.
156000	079	106	-9.2	.1060+01	.1399+01	-9999.
157000	079	107	-8.2	.1020+01	.1341+01	-9999.
158000	077	106	-9.7	.9810+00	.1297+01	-9999.
159000	074	107	-12.2	.9434+00	.1259+01	-9999.
160000	072	109	-12.6	.9069+00	.1212+01	-9999.
161000	070	112	-7.2	.8725+00	.1143+01	-9999.
162000	069	117	-7.6	.8398+00	.1102+01	-9999.
163000	065	123	-14.2	.8076+00	.1086+01	-9999.
164000	060	129	-13.2	.7765+00	.1041+01	-9999.
165000	052	137	-12.8	.7466+00	.9989+00	-9999.
166000	040	147	-12.1	.7160+00	.9583+00	-9999.
167000	027	157	-7.2	.6907+00	.9046+00	-9999.
168000	013	176	-10.2	.6647+00	.8807+00	-9999.
169000	005	259	-9.3	.6394+00	.8442+00	-9999.
170000	011	323	-8.2	.6151+00	.8089+00	-9999.
171000	016	336	-9.2	.5919+00	.7811+00	-9999.
172000	015	341	-11.6	.5694+00	.7585+00	-9999.
173000	006	310	-15.2	.5473+00	.7390+00	-9999.
174000	013	217	-15.6	.5262+00	.7116+00	-9999.
175000	032	210	-16.1	.5057+00	.6854+00	-9999.
176000	048	211	-12.0	.4862+00	.6486+00	-9999.
177000	064	214	-11.7	.4673+00	.6229+00	-9999.
178000	072	219	-8.4	.4498+00	.5919+00	-9999.
179000	077	225	-10.8	.4327+00	.5795+00	-9999.
180000	079	232	-11.8	.4163+00	.5550+00	-9999.
181000	079	239	-16.7	.4002+00	.5436+00	-9999.
182000	081	242	-16.4	.3846+00	.5219+00	-9999.
183000	084	244	-16.4	.3697+00	.5017+00	-9999.
184000	089	243	-17.6	.3553+00	.4843+00	-9999.
185000	099	241	-18.1	.3414+00	.4666+00	-9999.
186000	111	239	-17.2	.3281+00	.4463+00	-9999.
187000	124	238	-17.1	.3152+00	.4289+00	-9999.
188000	136	238	-15.6	.3030+00	.4099+00	-9999.
189000	152	239	-16.2	.2912+00	.3947+00	-9999.
190000	165	240	-15.2	.2800+00	.3781+00	-9999.
191000	177	241	-13.2	.2692+00	.3608+00	-9999.
192000	187	243	-16.6	.2588+00	.3514+00	-9999.
193000	195	245	-21.5	.2486+00	.3441+00	-9999.
194000	204	247	-23.7	.2387+00	.3333+00	-9999.
195000	209	249	-23.2	.2292+00	.3194+00	-9999.
196000	212	251	-23.9	.2200+00	.3074+00	-9999.
197000	214	253	-20.9	.2118+00	.2925+00	-9999.
198000	216	256	-21.4	.2044+00	.2828+00	-9999.
199000	216	258	-24.6	.1963+00	.2751+00	-9999.
200000	216	260	-26.6	.1883+00	.2661+00	-9999.
201000	216	262	-28.7	.1807+00	.2516+00	-9999.
202000	214	264	-30.6	.1733+00	.2491+00	-9999.
203000	212	265	-32.2	.1661+00	.2401+00	-9999.
204000	212	267	-34.2	.1592+00	.2321+00	-9999.

TABLE 5. (Continued)

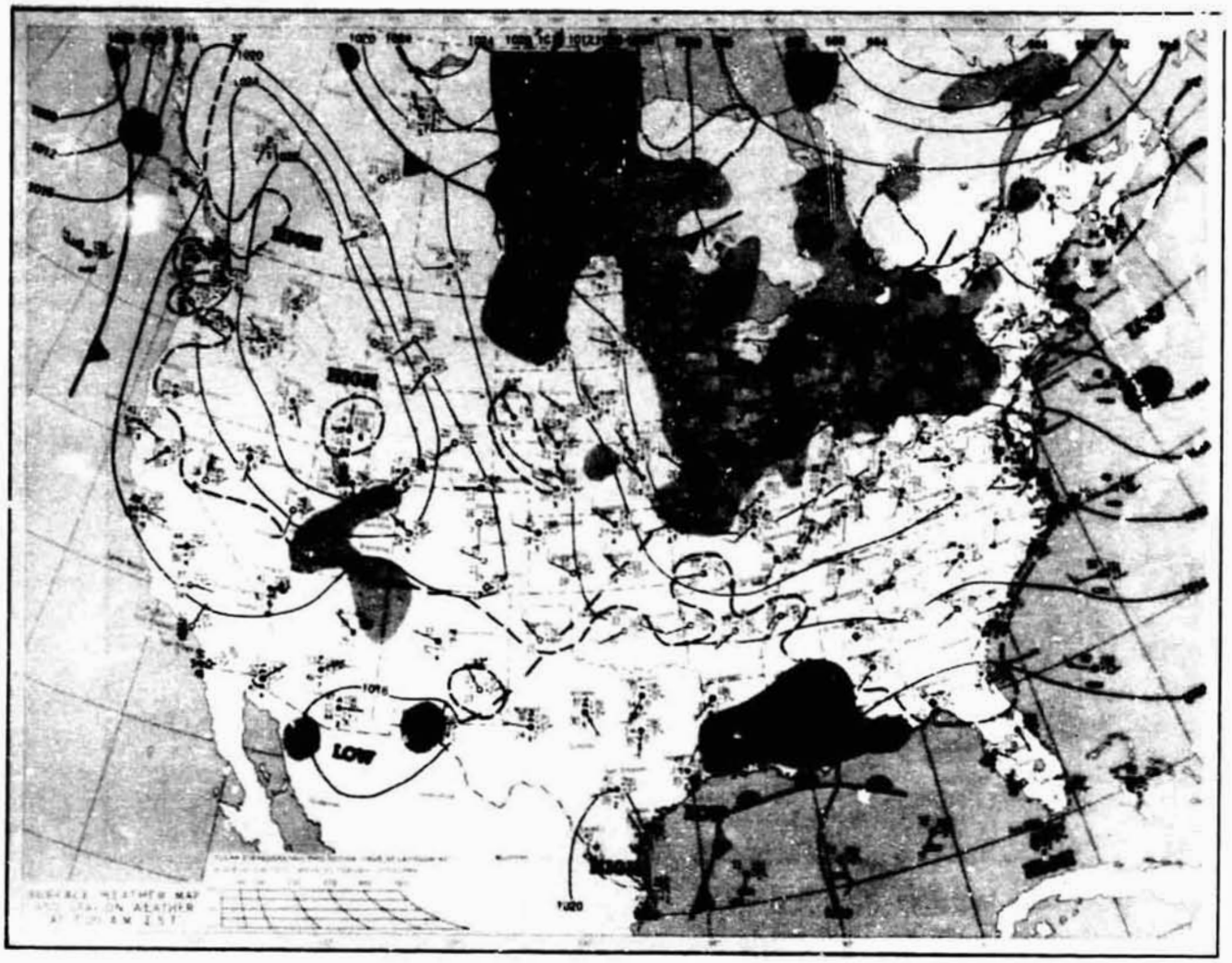
ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
205000	211	269	-35.5	.1525+00	.2236+00	-9999.
206000	209	271	-35.2	.1461+00	.2139+00	-9999.
207000	207	273	-37.1	.1400+00	.2066+00	-9999.
208000	206	274	-37.2	.1341+00	.1980+00	-9999.
209000	202	274	-40.2	.1284+00	.1920+00	-9999.
210000	200	274	-42.2	.1229+00	.1853+00	-9999.
211000	197	274	-45.1	.1176+00	.1797+00	-9999.
212000	194	274	-46.2	.1124+00	.1726+00	-9999.
213000	189	273	-47.8	.1075+00	.1662+00	-9999.
214000	187	272	-49.3	.1027+00	.1598+00	-9999.
215000	185	271	-50.2	.9810-01	.1533+00	-9999.
216000	182	270	-51.3	.9370-01	.1472+00	-9999.
217000	179	269	-53.6	.8950-01	.1420+00	-9999.
218000	179	268	-54.2	.8540-01	.1358+00	-9999.
219000	179	268	-54.2	.8160-01	.1298+00	-9999.
220000	177	269	-55.7	.7790-01	.1248+00	-9999.
221000	179	271	-58.8	.7430-01	.1207+00	-9999.
222000	177	273	-60.5	.7090-01	.1161+00	-9999.
223000	177	274	-62.0	.6760-01	.1115+00	-9999.
224000	179	276	-64.2	.6420-01	.1070+00	-9999.
225000	177	278	-66.1	.6100-01	.1026+00	-9999.
226000	177	279	-68.1	.5790-01	.9835-01	-9999.
227000	175	280	-69.1	.5520-01	.9424-01	-9999.
228000	175	281	-69.2	.5260-01	.8982-01	-9999.
229000	173	282	-70.2	.5010-01	.8598-01	-9999.
230000	173	282	-70.2	.4770-01	.8186-01	-9999.
231000	172	282	-70.3	.4540-01	.7795-01	-9999.
232000	172	281	-71.2	.4310-01	.7433-01	-9999.
233000	173	280	-70.2	.4110-01	.7053-01	-9999.
234000	173	278	-70.2	.3910-01	.6710-01	-9999.
235000	173	275	-69.2	.3720-01	.6353-01	-9999.
236000	175	272	-69.2	.3540-01	.6045-01	-9999.
237000	177	269	-69.2	.3370-01	.5755-01	-9999.
238000	179	265	-68.4	.3210-01	.5463-01	-9999.
239000	182	262	-67.9	.3050-01	.5177-01	-9999.
240000	185	258	-67.2	.2900-01	.4904-01	-9999.
241000	190	255	-65.9	.2770-01	.4655-01	-9999.
242000	194	252	-64.3	.2630-01	.4388-01	-9999.
243000	199	249	-62.8	.2510-01	.4157-01	-9999.
244000	202	247	-61.3	.2390-01	.3930-01	-9999.
245000	207	244	-60.2	.2280-01	.3729-01	-9999.
246000	211	242	-60.2	.2180-01	.3565-01	-9999.
247000	216	239	-59.2	.2080-01	.3386-01	-9999.
248000	221	237	-59.2	.1980-01	.3223-01	-9999.
249000	226	235	-59.2	.1890-01	.3077-01	-9999.
250000	231	233	-59.2	.1800-01	.2930-01	-9999.
251000	236	231	-59.7	.1720-01	.2807-01	-9999.
252000	241	230	-60.2	.1640-01	.2682-01	-9999.
253000	244	228	-60.2	.1560-01	.2551-01	-9999.
254000	249	227	-61.2	.1490-01	.2448-01	-9999.

TABLE 5. (Continued)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
255000	253	226	-60.5	.1420-01	.2327-01	-9999.
256000	255	225	-60.2	.1350-01	.2208-01	-9999.
257000	256	224	-60.2	.1290-01	.2110-01	-9999.
258000	261	222	-61.2	.1230-01	.2021-01	-9999.
259000	263	221	-61.9	.1170-01	.1929-01	-9999.
260000	266	221	-62.4	.1120-01	.1851-01	-9999.
261000	270	220	-63.9	.1060-01	.1765-01	-9999.
262000	273	220	-64.2	.1010-01	.1683-01	-9999.
263000	273	219	-66.0	.9600-02	.1614-01	-9999.
264000	275	218	-67.2	.9200-02	.1556-01	-9999.
265000	276	218	-68.0	.8700-02	.1477-01	-9999.
266000	278	218	-68.5	.8300-02	.1413-01	-9999.
267000	280	218	-69.2	.7900-02	.1349-01	-9999.
268000	282	218	-69.6	.7500-02	.1283-01	-9999.
269000	282	218	-70.2	.7200-02	.1236-01	-9999.
270000	280	218	-70.2	.6800-02	.1167-01	-9999.
271000	280	218	-70.2	.6500-02	.1115-01	-9999.
272000	278	218	-70.2	.6200-02	.1064-01	-9999.
273000	276	218	-69.1	.5900-02	.1007-01	-9999.
274000	273	219	-67.6	.5600-02	.9490-02	-9999.
275000	257	219	-68.5	.5343-02	.9055-02	-9999.
276000	241	219	-69.5	.5098-02	.8639-02	-9999.
277000	224	219	-70.4	.4865-02	.8243-02	-9999.
278000	208	219	-71.4	.4642-02	.7865-02	-9999.
279000	192	219	-72.4	.4429-02	.7505-02	-9999.
280000	176	219	-73.3	.4226-02	.7161-02	-9999.
281000	160	219	-74.3	.4032-02	.6833-02	-9999.
282000	143	219	-75.2	.3847-02	.6519-02	-9999.
283000	127	219	-76.2	.3671-02	.6220-02	-9999.
284000	111	220	-77.1	.3503-02	.5935-02	-9999.
285000	095	220	-78.1	.3342-02	.5663-02	-9999.
286000	079	220	-79.1	.3189-02	.5404-02	-9999.
287000	062	221	-80.0	.3043-02	.5156-02	-9999.
288000	046	222	-81.0	.2903-02	.4919-02	-9999.
289000	030	224	-81.9	.2770-02	.4694-02	-9999.
292000	021	212	-83.1	.2370-02	.4340-02	-9999.
295000	014	185	-84.3	.2020-02	.3720-02	-9999.
298000	012	207	-83.7	.1600-02	.2930-02	-9999.
301000	012	226	-82.8	.1360-02	.2490-02	-9999.
304000	010	232	-81.8	.1160-02	.2110-02	-9999.
307000	003	182	-80.8	.9940-03	.1790-02	-9999.
310000	018	094	-79.9	.8480-03	.1520-02	-9999.
313000	037	089	-78.7	.7260-03	.1290-02	-9999.
316000	041	089	-77.1	.6240-03	.1090-02	-9999.
319000	045	089	-75.6	.5360-03	.9290-03	-9999.
322000	049	089	-74.1	.4610-03	.7890-03	-9999.
325000	054	089	-72.6	.3960-03	.6700-03	-9999.
328000	058	089	-71.1	.3400-03	.5690-03	-9999.
331000	061	089	-68.0	.2950-03	.4840-03	-9999.
334000	064	089	-64.8	.2550-03	.4120-03	-9999.

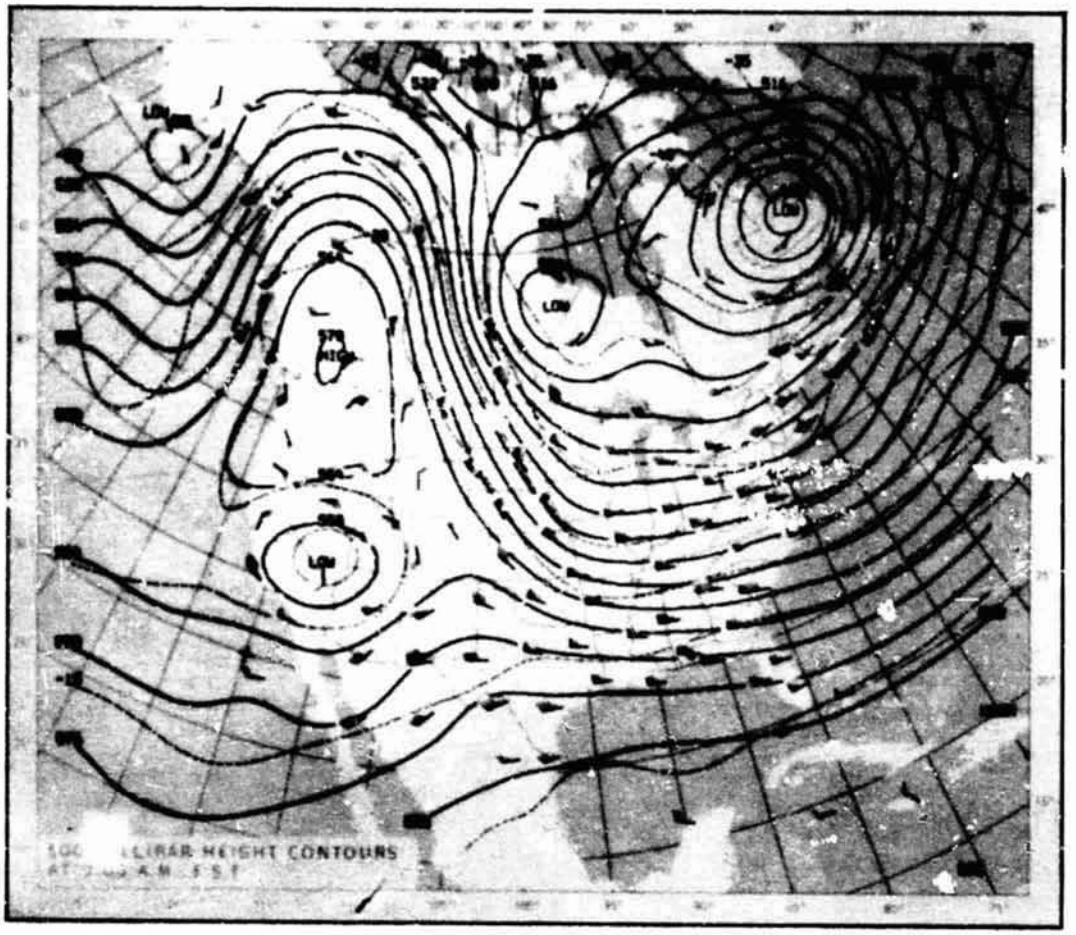
TABLE 5. (Concluded)

ALTITUDE (FT)	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	TEMPERATURE (DEG C)	PRESSURE (MILLIBARS)	DENSITY (GRAM/M3)	DEW POINT (DEG C)
337000	066	089	-61.7	.2210-03	.3510-03	-9999.
340000	067	088	-58.5	.1910-03	.2980-03	-9999.
343000	066	088	-55.4	.1660-03	.2540-03	-9999.
346000	066	089	-51.2	.1440-03	.2170-03	-9999.
349000	066	088	-45.9	.1270-03	.1860-03	-9999.
352000	065	088	-40.6	.1110-03	.1590-03	-9999.
355000	062	087	-35.4	.9780-04	.1360-03	-9999.
358000	056	085	-30.1	.8580-04	.1170-03	-9999.
361000	046	087	-24.8	.7530-04	.9990-04	-9999.
364000	046	086	-17.7	.6760-04	.8690-04	-9999.
367000	046	084	-10.6	.6060-04	.7560-04	-9999.
370000	044	082	-3.5	.5430-04	.6580-04	-9999.
373000	041	079	3.6	.4860-04	.5720-04	-9999.
376000	036	073	10.7	.4350-04	.4980-04	-9999.
379000	029	080	18.6	.3920-04	.4360-04	-9999.
382000	025	078	27.4	.3570-04	.3840-04	-9999.
385000	021	074	36.4	.3260-04	.3390-04	-9999.
388000	017	068	45.8	.2980-04	.3010-04	-9999.
391000	014	060	55.4	.2740-04	.2670-04	-9999.
394000	011	045	65.2	.2520-04	.2380-04	-9999.
397000	009	021	75.2	.2330-04	.2130-04	-9999.
400000	009	350	85.4	.2160-04	.1910-04	-9999.



Surface Synoptic Map at 1200 UT January 24, 1985 — Isobaric, Frontal, and Precipitation Patterns are Shown in Standard Symbolic Form.

Figure 1. Surface synoptic chart 7 hr 50 min before launch of STS-51C.



500 Millibar Height
Contours at 1200 UT
January 24, 1985.
Continuous Lines Indicate Height Contours in Feet Above Sea Level. Dashed Lines are Isotherms in Degrees Centigrade. Arrows Show Wind Direction and Speed at the 500 MB Level.

Figure 2. 500 mb map 7 hr 50 min before launch of STS-51C.

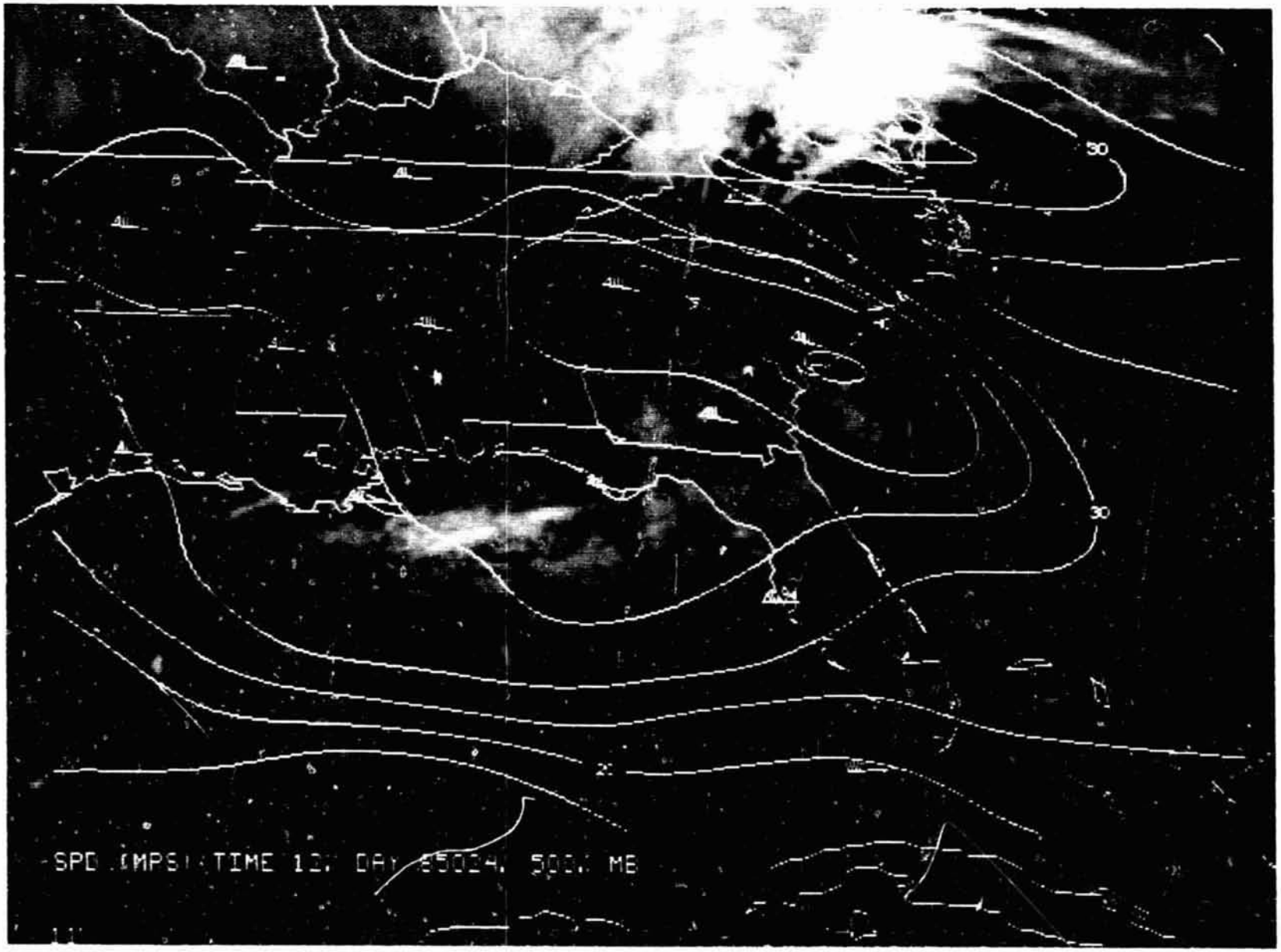


Figure 3. GOES-6 visible imagery of cloud cover 10 min after launch of STS-51C (2000 UT, January 24, 1985). 500-mb contours and wind barbs are also included for 1200 UT.

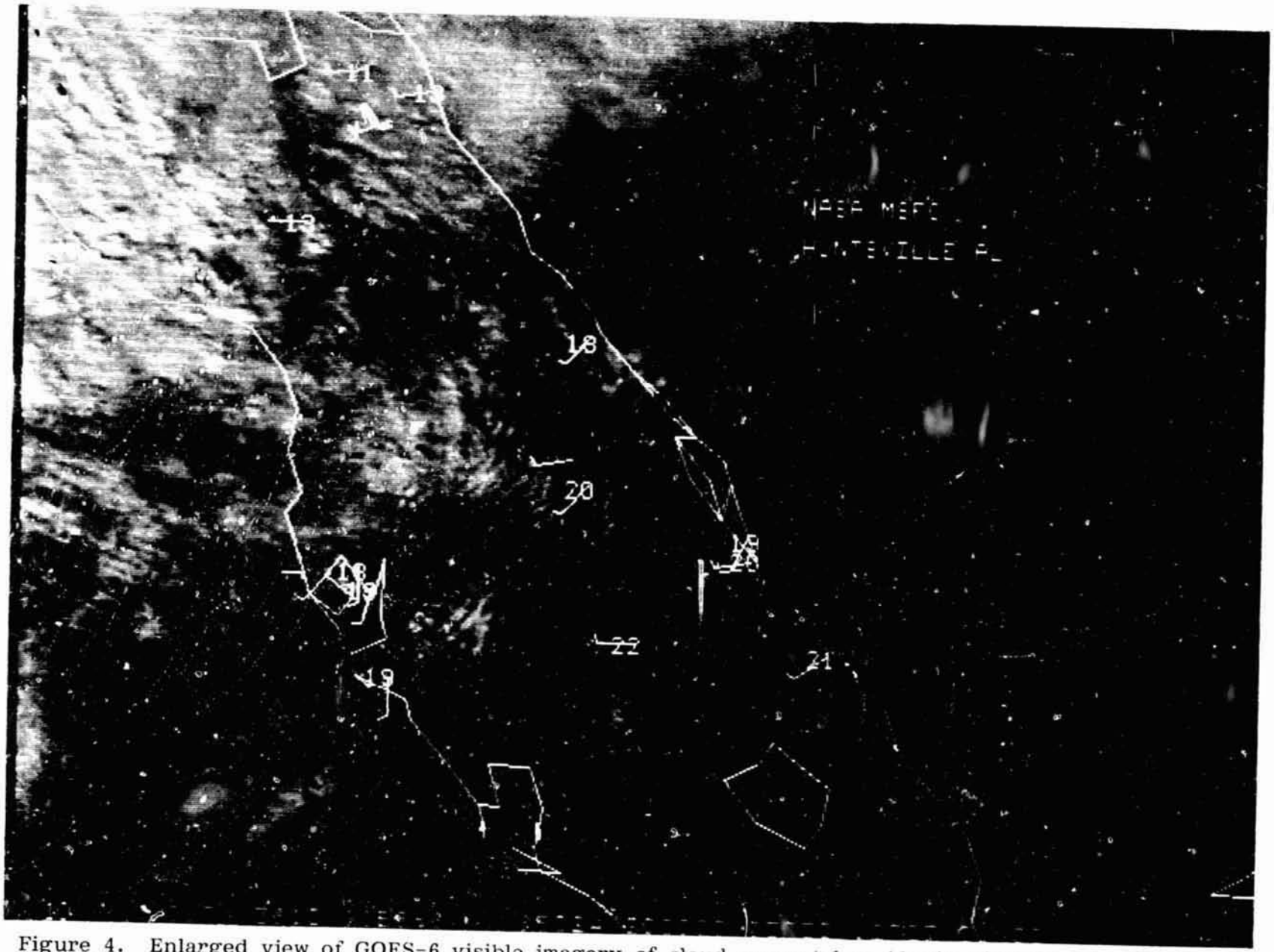


Figure 4. Enlarged view of GOES-6 visible imagery of cloud cover taken 10 min after launch of STS-51C (2000 UT, January 24, 1985). Surface temperatures and wind barbs for 2000 UT are also included.

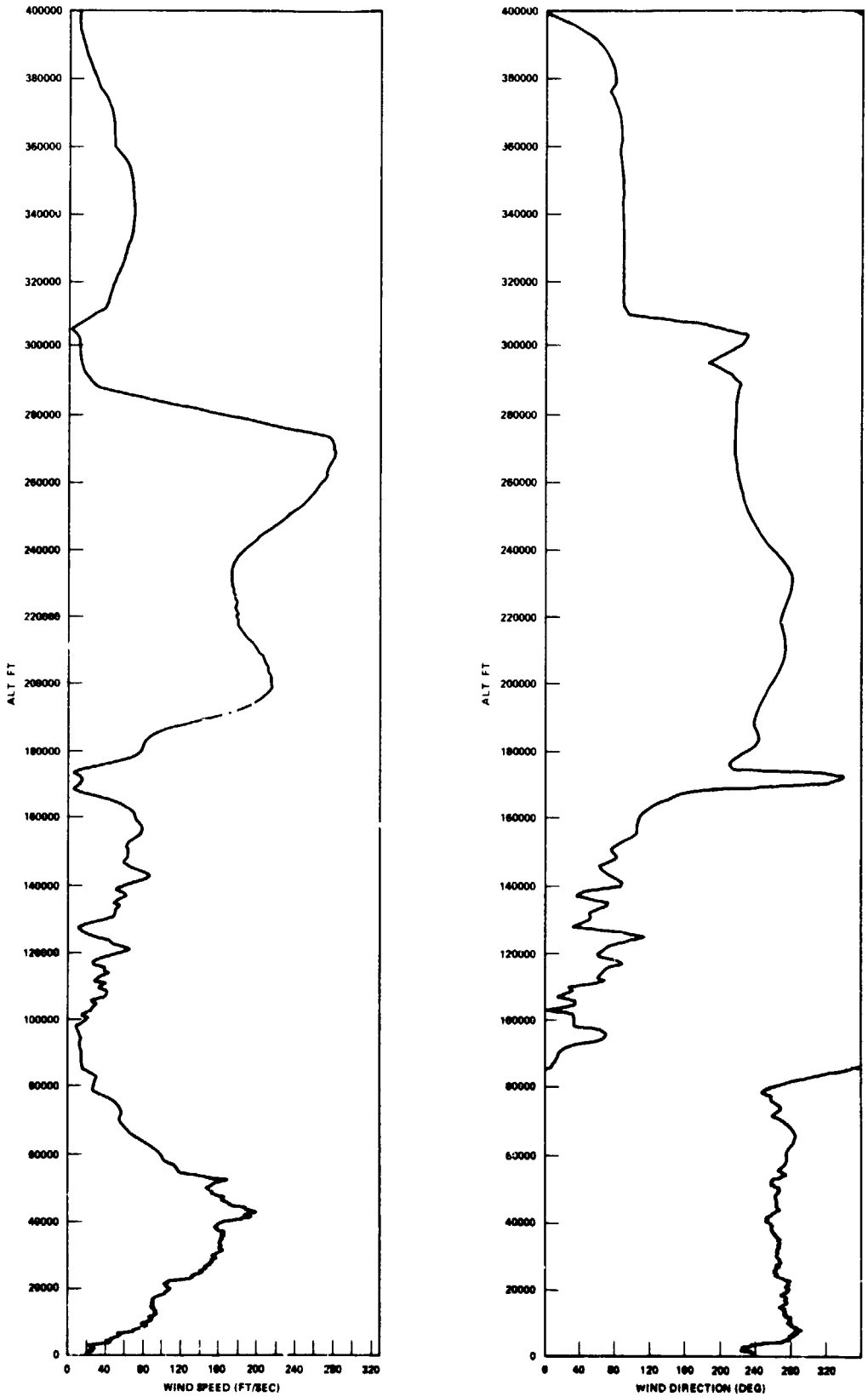


Figure 5. Scalar wind speed and direction at launch time of STS-51C.

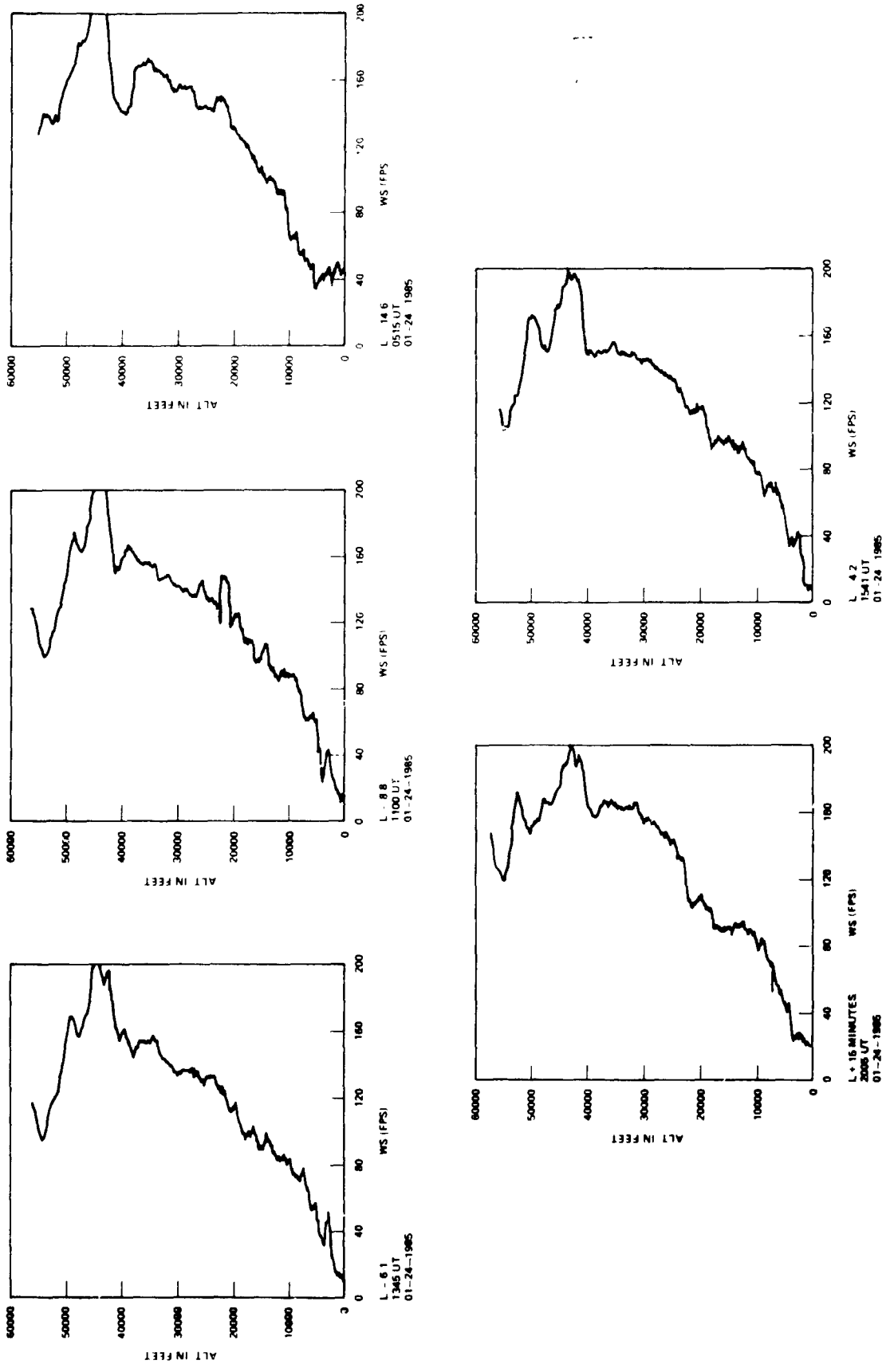


Figure 6. STS-51C prelaunch/launch Jimsphere-measured wind speeds (FPS).

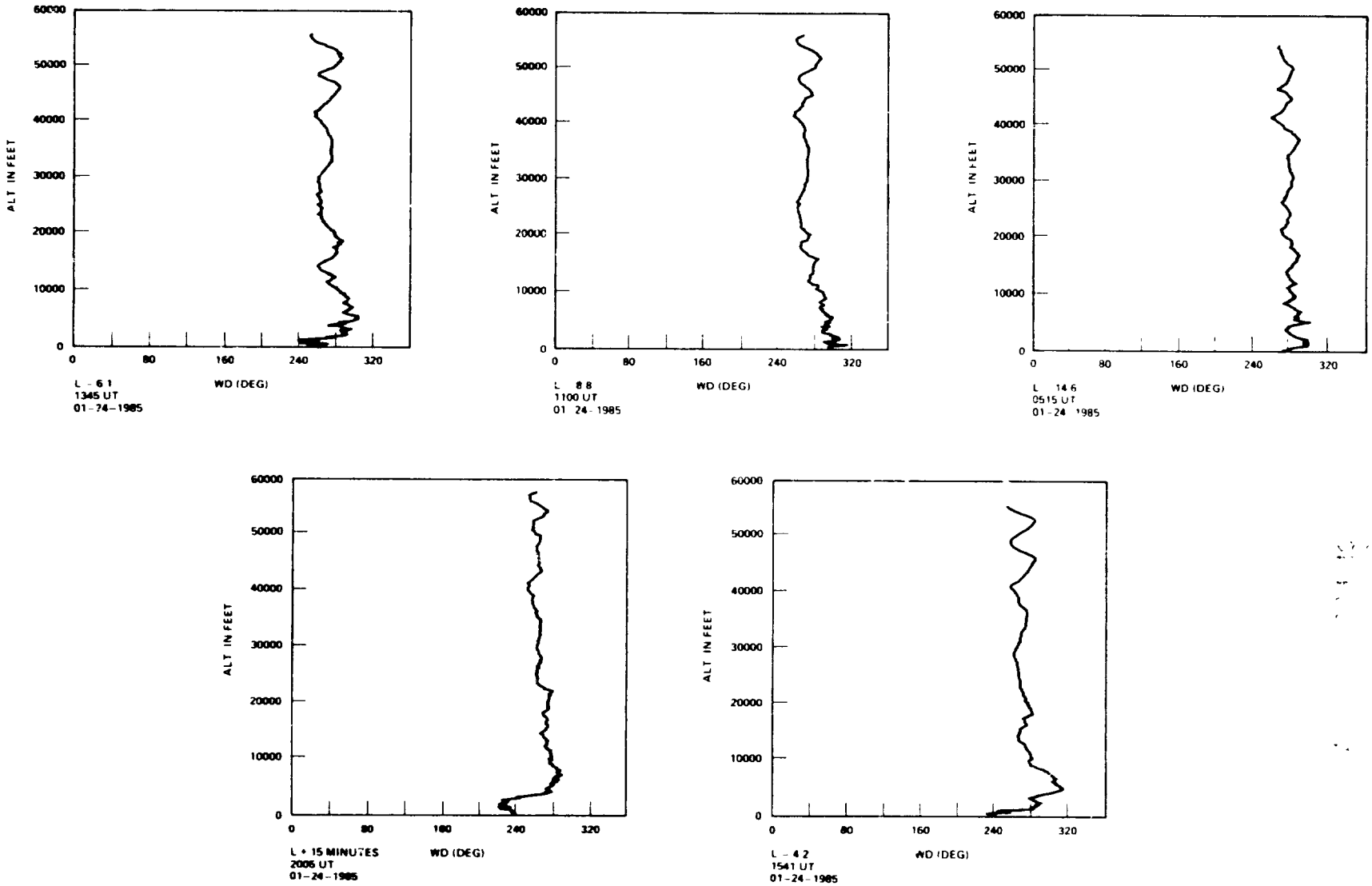


Figure 7. STS-51C prelaunch/launch Jimsphere-measured wind directions (degrees).

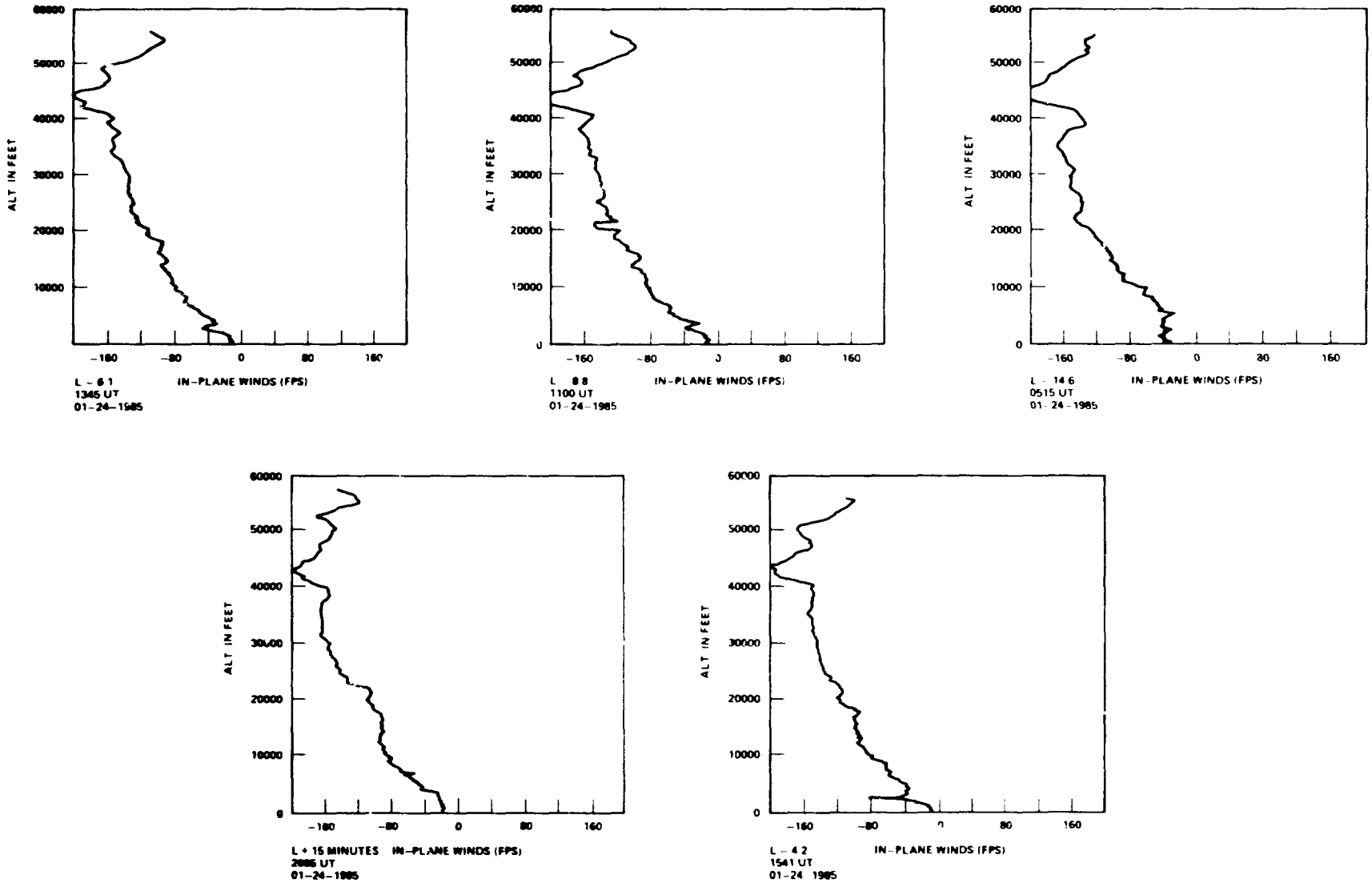


Figure 8. STS-51C prelaunch/launch Jimsphere-measured in-plane component winds (FPS).

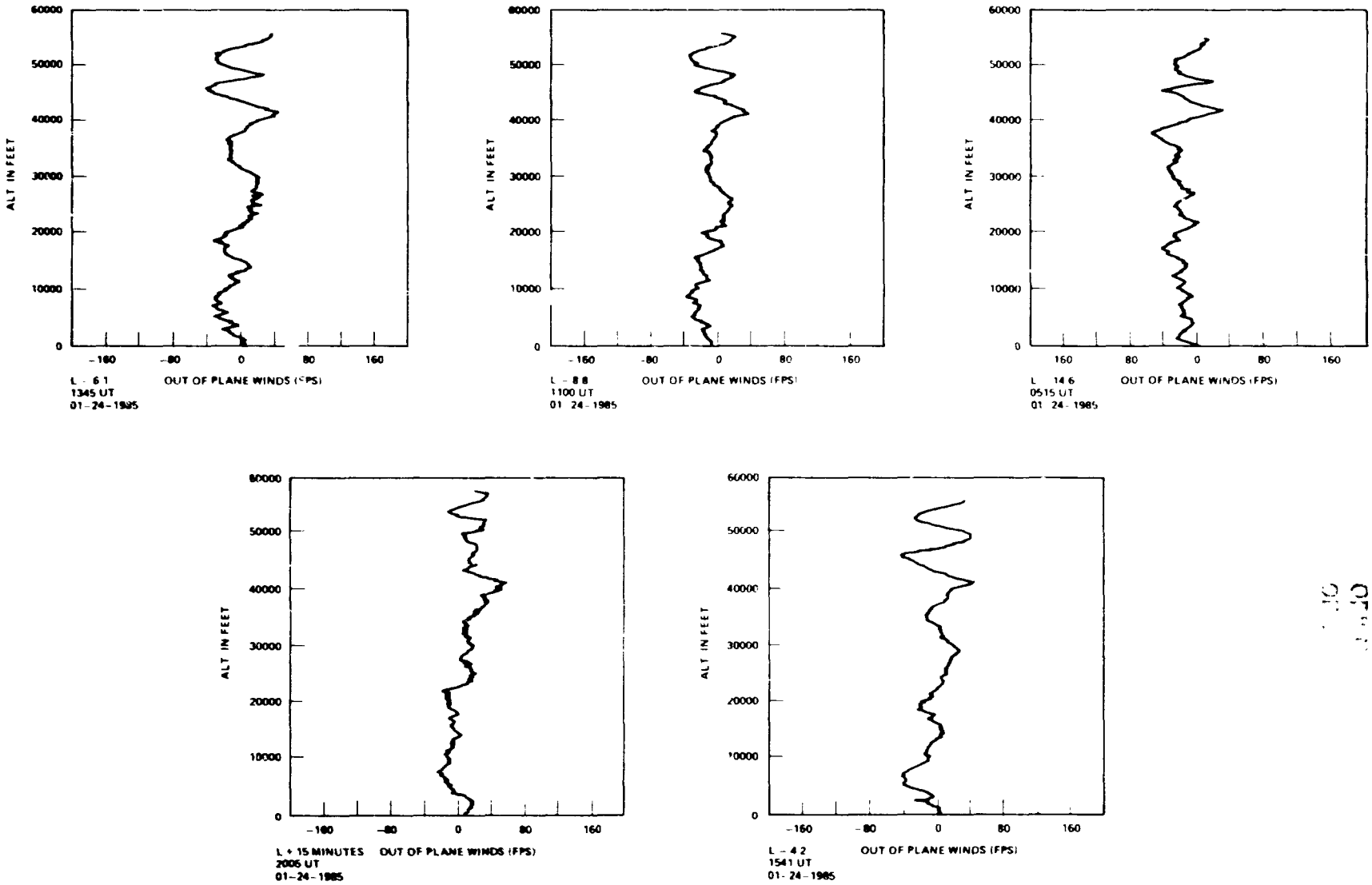


Figure 9. STS-51C prelaunch/launch Jimsphere-measured out-of-plane component winds (FPS).

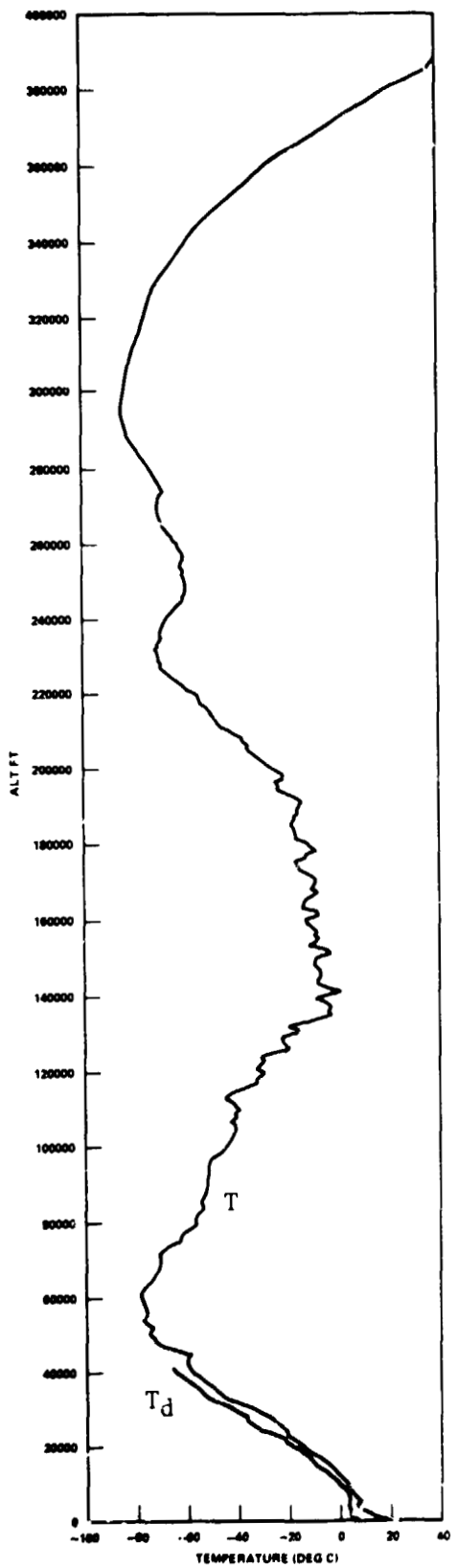


Figure 10. STS-51C temperature profiles versus altitude for launch (ascent).

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APPROVAL

ATMOSPHERIC ENVIRONMENT FOR SPACE SHUTTLE (STS-51C) LAUNCH

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The information in this report has been reviewed for technical content. Review of any information concerning Department of Defense or nuclear energy activities or programs has been made by the MSFC Security Classification Officer. This report, in its entirety, has been determined to be unclassified.

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